

PARTICIPATORY AND  
INTEGRATED  
POLICY:  
A FIELD GUIDE FOR POLICY FORMULATION IN  
SMALL-SCALE FISHERIES

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The *Field Guide* is a sequel to the complementary report entitled: *Participatory and Integrated Policy: A Framework for Small-Scale Fisheries in Sub-Saharan Africa* written by Jock Campbell and Philip Townsley. The *Framework Document* explains the origins and application of the *PIP* process, and it is essential that the documents are seen as two parts of that process.

The work in this *Field Guide* has evolved through a series of steps to arrive at its current state. In that process both Krishan George and Philip Townsley have contributed significantly to the ideas and content. Their help is both acknowledged and much appreciated.

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# 1. INTRODUCTION TO THE FIELD GUIDE

In recent decades international development policies have undergone considerable evolution but these policies have not always produced the positive results hoped for. Policies in the fisheries sector have also evolved but the survival of many of the world's fisheries is now threatened by depleted resources, habitat destruction, declining biodiversity, pollution and declining performance of commercial enterprises. In addition food security is reduced in many countries and some of the most peripheral rural fishing communities are in a severe state of poverty.

The reasons for these problems are many and complex. Some of these problems result, however, from conflicts in the formulation and implementation of policies. The **Participatory and Integrated Policy (PIP)** process has been developed to reduce these conflicts and to make the policy process more effective:

**The PIP process is a structured approach to research, dialogue, decision-making, institutional reform and development-resource allocation, which promotes greater involvement of all stakeholders in the policy process and harmonises their conflicting objectives, strategies and capacities.**

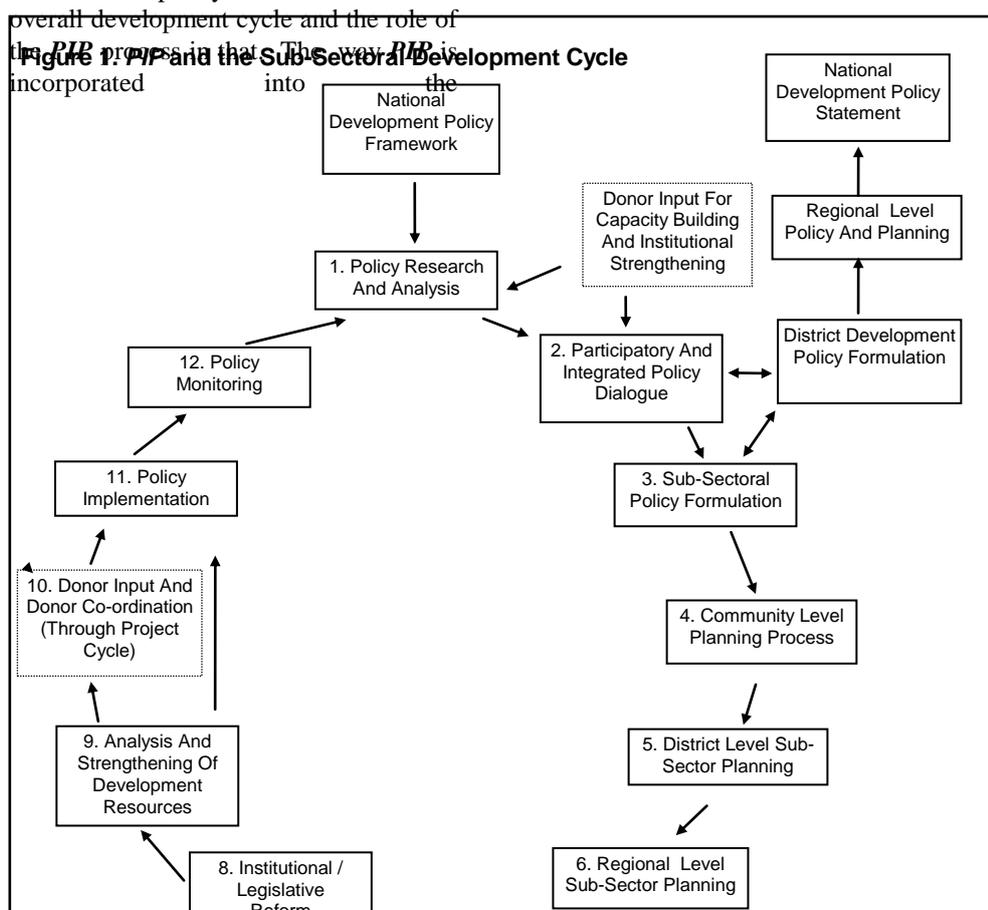
The **PIP** process encourages a change in emphasis towards greater co-ordination and integration, and brings more of the

stakeholders into the policy process in more meaningful ways. It is not a magic formula which will transform ineffective policies instantly. It is rather a process which must evolve to fit local circumstances and to assist in gradually changing those circumstances. It advocates a change in the roles played by the government, the private sector, NGOs and fisherfolk in the sub-sector. This change emphasises a more balanced partnership between the various stakeholders in the policy process. These new roles require new skills, a reallocation of resources, and institutional reorganisation at all levels.

This **Field Guide** consists of an annotated checklist which aims to assist researchers and facilitators from different backgrounds to co-ordinate their inputs into one part of the **PIP** process, that of policy formulation.

It is important to understand how policy formulation fits into the wider **PIP** process. To do so, this document must be read in association with the complementary document: **Participatory and Integrated Policy: A Framework for Small-Scale Fisheries**.

The **framework document** explains the **PIP** process, why it is important and how it can be used. It provides the foundation upon which the **Field Guide** is built. It also relates policy formulation to the



small-scale fisheries sub-sectoral development cycle is shown below in Figure 1.

The *PIP Field Guide* is an output from policy research funded by the British Overseas Development Administration (ODA) and carried out by Integrated Marine Management Ltd (IMM). The research project, entitled *Private Sector, Poverty Focus and the Environment in Small-Scale Fisheries in Sub-Saharan Africa: Strategy Conflicts and Harmonisation*, was funded under the ODA's Policy Research Programme.

The research evolved from a concern that policies formulated by development agencies (donors, lending agencies, governments and NGOs) in different policy areas, might conflict with each other, waste scarce resources and reduce the effectiveness of these policies. Particular concerns were expressed over conflicts between three specific areas in which policy may be formulated. They are:

- Support for private sector development
- Poverty alleviation
- Environmental protection

These areas have evolved from the wider policy areas associated with economic development, social development and concern for the environment.

The research was aimed at identifying the possible conflicts between strategies in these three policy areas and determining ways in which the strategies could be harmonised to

resolve such conflicts, thus improving the overall policy process.

The conclusions of the research were that:

- *Conflicts do exist in the formulation and implementation of policy*
- *These conflicts waste very significant amounts of scarce development resources*
- *They also lead to direct friction between development agents and the very people they aim to assist*
- *It is possible to modify the ways policies are formulated and implemented to allow those policies to complement each other rather than conflict*

The research not only identified conflicts between strategies in the three policy areas, it also highlighted the need to resolve other conflicts such as:

- *Conflicts, within the small-scale fisheries sub-sector, between development strategies and the coping strategies developed by private sector participants to address limited private sector growth, poverty and environmental degradation*
- *Conflicts between sub-sectoral strategies within small-scale fisheries, and strategies in other sectors*

During the process of carrying out the field trials it became apparent that it was also necessary to look at the conflicts in small-scale fisheries in a much wider development context than was previously assumed. It was necessary to identify strategies, and conflicts between strategies, within the wider context of sub-national decentralised policies, national development policies, and international obligations and agreements.

The range of potential conflict in policy formulation and implementation was thus found to be very significant. Three key reasons were found to be the main factors causing these conflicts:

- *Most governments, NGOs and international agencies do not deal with the social, economic and environmental needs of the sub-sector in a balanced way*
- *The majority of the private sector participants, at all levels of the sub-sector, are excluded from involvement in the decision-making processes from policy formulation, through policy implementation, to the monitoring of policies*
- *The policy processes within and between sectors, and between countries, are rarely well integrated and harmonised*

The research indicated that community-level planning tools are not well understood or used in the sub-sector. Where they are used, the skills for using them in the field and the mechanisms

for linking the results of using such tools to national development, were found to be weak. Linkages between broader national-level development policies and the needs, aspirations and capacities of the different participants in the sub-sector, were also found to be poor.

The participants in the sub-sector, both private and public, are not actively involved in the process of formulating and implementing policy. As a result individual and community needs and aspirations, and those of the nation, are often in conflict. The lack of integration of policies between and within sectors, and between the different levels of government were shown to create many of the problems faced by the small-scale fisheries sub-sector.

There is thus a clear need to increase the involvement of all public and private sector participants in decision-making and to promote much better communication, co-ordination and harmonisation between sectors, and between the different levels of government.

Many of these failings have their origins in the way policy has evolved in the sub-sector. Concerns for production and conservation have overshadowed the social needs of the participants and wider environmental concerns, resulting in an imbalance of development policies, support and institutional structures.

To overcome these factors it is necessary for the attitudes, skills, knowledge, resources, institutional organisation and methodologies of intervention in the sub-sector to change very significantly. These changes are partially foreseen and outlined in the provisions of both the **Rio Declaration** and **Agenda 21**. There is now a need for them to be translated into the practicalities of development intervention.

*PIP* aims to give some structure to that process within the small-scale fisheries sub-sector. The *Field Guide* provides a practical checklist for understanding the features of, and factors contributing to,

limited private sector development, poverty, and environmental degradation, and to assist in overcoming the conflicts between the strategies associated with these problem areas.

*PIP* was developed initially for the small-scale fisheries sub-sector in Sub-Saharan Africa. Its use and development in other regions of the world (particularly Asia and Europe), however, has demonstrated the general applicability of the process. The *Field Guide* has thus been written for more global application.

## 2. THE PURPOSE OF THE FIELD GUIDE

The *Field Guide* is complementary to the *Framework Document*. It builds on the *PIP* concept developed in that document and should not be used in isolation from it.

The *Field Guide* does not deal with the whole of the *PIP* process. It only relates to research associated with the policy formulation part of the *PIP* process. It aims to identify some of the conflicts which exist within the policy formulation process and to overcome these conflicts through a process of policy harmonisation.

The *Field Guide* is designed to provide some structure to researching the policy formulation process. It aims to complement, and form a bridge between, the specific social, economic environmental and technical fisheries skills of researchers in the area of small-scale fisheries policy. It is not meant to replace or substitute for those specialist skills. Rather it is meant to focus the skills and provide a common framework for their greater integration.

The guide is designed as a prompt, to suggest areas which might be considered for research. It is not exhaustive. It covers some of the key areas of the policy formulation process but relies on the specialist skills of the users to take the checklists further. It only addresses the surface of this vast subject. To cover the subject in any depth would require many volumes. It does, however, give sufficient detail to suggest areas of deeper study.

The guide is designed for use by a range of specialists working in the field. It is aimed primarily at middle-level government staff, NGO workers, and researchers in institutions. It will also be of use to those people who are co-ordinating, or instructing in the use of, the *PIP* process. The guide will also be useful for people outside of small-scale fisheries who may be interested in the impact on fisheries of strategies developed in their sector. Donor agency staff may also find the guide useful when assessing proposals for support for the sub-sector.

### 3. STRUCTURE AND ORGANISATION OF THE FIELD GUIDE

Part 2 of the *Field Guide* consists of an annotated checklist. The checklist follows the structure of the *PIP* Policy Formulation Flowchart shown in figure 2 below.

This consists of thirty distinct areas of research and analysis which can guide the participatory and integrated formulation of policy.

It starts by looking at the wider national policy framework upon which the *PIP* process is built and which is modified by the *PIP* process over time. This aims to define a policy framework which reflects the constitutional requirement of the country and the wider national and international realities which face it. The framework largely provides a foundation upon which policy can be built (section 5.1). It then reviews the wide array of policies across different sectors so that later it will be possible to determine how they might impact upon the formulation of policies in small-scale fisheries (section 5.2).

This is followed by an analysis of the fisheries sector and the role of the small-scale fisheries sub-sector in particular in the nation's development potential (section 5.3).

The three key problem areas of development are then addressed. These are limited private sector development, poverty and environmental degradation. These are each reviewed in terms of:

- How they relate to the country concerned and to the small-scale fisheries sub-sector (sections 5.4, 5.12 and 5.20)
- The features of the problem areas (sections 5.5, 5.13 and 5.21)
- The factors contributing to their existence (sections 5.6, 5.14 and 5.22)
- The needs, aims and coping strategies of fisherfolk in relation to these problems (sections 5.7, 5.15 and 5.23)
- The consequences of the continuation of these problems in terms of the achievement of national development objectives and fishworker's needs and aspirations (sections 5.8, 5.16 and 5.24)
- Priority factors which need to be addressed (sections 5.9, 5.17 and 5.25)
- Sub-sectoral strategies which can be used to overcome these problems (sections 5.10, 5.18 and 5.26)
- Possible conflicts and complementarities between sub-sector strategies and community coping strategies, and the ways of harmonising these strategies (sections 5.11, 5.19 and 5.27)

The ways in which these three groups of harmonised strategies either conflict with or are complementarity to each other, and how they might be harmonised, are then

outlined (section 5.28). Ways of harmonising these strategies with the strategies in other sectors are then discussed (section 5.29). Finally the possibilities for harmonising sub-sectoral strategies with those at the district, regional, national and international levels are outlined (5.30).

Each of the thirty steps are described in broad terms followed by a checklist of questions. The questions are presented at two levels. The second represents a more detailed level than the first.





## 4. USING THE FIELD GUIDE

The checklist in Part 2 consists of a logical and progressive series of steps which take those involved in policy-making through the process of analysing and facilitating the formulation of policy.

The checklist is a tool in the policy formulation process which aids integration and participation in that process. The 30 steps of the checklist progress through a series of stages in policy formulation which gradually increase the involvement of the different stakeholders in the process and integrate their needs, aspirations and capacities.

The checklist can be used as part of a specially structured policy process and as a tool to make existing policy processes more effective.

It can be followed in sequence or it can be used as a reference tool to cross-check completeness and coverage in policy work. It can also be used in planning the sub-sector at project levels as a source of information and ideas. The steps dealing with the three main problem areas are written so that they may be used independently of each other for this purpose. This does result in some repetition but it also increases the flexibility of the checklist.

Under each step of the checklist there is a brief description of the key information which will be required in policy formulation. This is followed by a shaded box containing questions. These questions are designed to prompt the

researcher with areas which might need to be looked at. The questions are not the only ones which need to be asked. They merely point the direction of lines of enquiry.

In its implementation, the *PIP* process has the following key features:

- *It is ongoing*
- *It is participatory*
- *It is multi-disciplinary*
- *It is flexible*

These and other features of *PIP* process are discussed below.

### 4.1 The Time Frame

Implementation of the *PIP* process is a considerable undertaking which requires many years to become fully effective and is never completed. It is never completed because the *PIP* process is both a way of achieving a fairer, more equitable and sustainable form of development and a process for continuing that development. The benefits of such development will only continue if the policy process continues to be both integrated and participatory.

The *PIP* process, and the use of this guide, cannot be thought of as short cuts to policy formulation. They will assist the process and improve its effectiveness but will not substitute for thorough and detailed research.

## 4.2 Participation

The *PIP* process is nothing if it is not participatory. It cannot be implemented from a desk in an office, although some elements of it will involve desk-work. It requires spending much time interacting with fisherfolk in the village setting. It is also not a rigidly defined piece of research. The checklist is clearly structured but this is to aid understanding not to make the policy formulation process rigid. It is important that fisherfolk are actively encouraged from the start to participate in defining what needs to be considered in the policy formulation process from their perspectives, how the research would best be carried out, and how the results should be interpreted.

This will require considerable skill in a range of participatory methodologies which are outlined in sections 9.1, 9.2 and 9.3 of the *Framework Document* (see also the section dealing with the terms used in the text at the beginning of the *Framework Document*).

## 4.3 Required Skills

The *PIP* process is not, as discussed above, designed to replace specialist knowledge. It is aimed at providing a structure to allow specialists to co-ordinate their inputs to the *PIP* process. This will require that development agencies co-operate much more with each other in order to share skills and experience. It will also mean that individual researchers will have to adopt new skills.

The research and analysis involved in *PIP* process requires a range of tools, for information gathering, analysis and generating dialogue. Those involved in co-ordinating the *PIP* process should therefore ensure that multi-disciplinary teams with appropriate skills are assembled to carry out the work and are adequately trained in the skills.

## 4.4 Flexibility

In different situations different elements of the guide will be more important than others. Fisheries are diverse and differ from each other in many ways. As such the checklist must be considered as a structure to be developed and modified to suite local needs. Likewise the relative importance of the three policy areas (private sector, poverty and the environment) will vary between countries. As such the order in which they appear in the research should be changed to reflect local priorities and the emphasis on each adjusted accordingly.

The participants in the small-scale fisheries sub-sector are likewise diverse. The *PIP* process is designed to address the needs of those who work in freshwater, marine, and lagoon environments; the poor and the more wealthy; men and women; the old and the young; those who harvest the fish, those who process and sell it, and those who support these activities; those who live in the rural environment and those who live in the towns and cities.

Clearly each of these groups will have different wants and needs. They will

have different strategies to cope with the problems of limited private sector development, poverty and environmental degradation. They will also have different capacities to respond to outside support. This guide cannot cater for all these differences. It does, however, try to guide the user where major differences may arise. **The burden, however, remains with the researcher to always consider the widest range of groups in the sub-sector.** If this is not done then the benefits which improved policy formulation can generate, may be dissipated or captured by a small group of participants. The remainder of the participants may, as a consequence, be further marginalised by the policy process.

#### 4.5 Sequencing

The guide follows a logical process with each of the thirty steps building on the results of the one before it. This is not to say that research work cannot be carried out on several different steps of the framework at the same time. This is possible, but it is advisable to interpret and use the findings of that research in a logical progression. There is also a need to continuously cross reference the work of later steps against earlier steps so that as more information is gained so the earlier parts of the work become more accurate and representative.

It is envisaged that the *Field Guide* will be used by teams of multi-disciplinary specialists who can assist each other in the technical aspects of the various areas covered by the guide. The text should

also be complemented by wider reading around the subject, and by discussion with specialists in the area in other sectors.

#### 4.6 The Output

The policy formulation part of the *PIP* process is aimed at providing a set of objectives and strategies for the small-scale fisheries sub-sector which address the problems of the sub-sector as perceived by all stakeholders from fisherfolk to central government. It aims to maximise the contribution which the sub-sector can make to achieving national and local development objectives. It also aims, in the longer term, to increase the efficiency and effectiveness of development agencies.

The set of objectives and strategies which evolve from the *PIP* process should be ones which all the stakeholders can agree to and which are in line with the wider needs of the nation. This will probably not be fully achieved on the first round of the *PIP* process, it would be a very major achievement if it were. The *PIP* process should gradually allow policies to evolve towards the ideal as attitudes, knowledge, skills and institutional capacities evolve.

How effective the *PIP* process is will depend on a range of factors:

- The level of participation and integration which already exists in the policy-making process
- The commitment of those concerned, to bring about change

- The awareness of primary stakeholders of their ability to participate
- The attitudes, skill, knowledge and institutional capacity of all concerned stakeholders to bring about that change
- The availability of resources to achieve the change

The *PIP* process has the flexibility to cater for different levels of change. Some countries may be in more of a position, or may desire, to move towards

greater levels of participation and integration than others. The *PIP* process caters for these differences.

The *PIP* process is one way of structuring change towards a more participatory and integrated policy process. The *Field Guide* is one tool which may be used in that process.

## 5. THE FIELD GUIDE CHECKLIST

### 5.1 Research and analysis of international, national, regional and district development policy processes

Participatory and integrated policy formulation cannot occur in a vacuum. It is influenced by a range of factors including:

- *The current policy formulation process*
- *International policy influences*
- *Sub-national policy interests*
- *The current development situation in the country*
- *The stated development objectives*
- *The constraints to achieving those objectives*

It is important to gain an understanding of these areas in order to begin to form a framework in which the *PIP* process can operate within the small-scale fisheries sub-sector. These factors are discussed below.

#### **Current policy-making**

Perhaps the most important factor which will influence future policy formulation in small-scale fisheries, is the current national-level policy-making practices and institutions. These need to be well understood if they are to be eventually developed and influenced, and if small-scale fisheries are to contribute more significantly to national development. This involves not only an understanding of how constitutional provisions are translated into practice and legislation, but also the form in which policy is stated.

- *What is meant by the term policy and how does it appear?*
  - *Do different policy formulation bodies mean different things when they refer to policy?*
  - *What is the constitutional basis of policy and policy-making procedures?*
  - *How is policy stated, what are the key documents which define it?*
  - *Is it divided into national, sectoral and regional policies?*
  - *Do these policies cover cross-cutting issues such as gender, poverty and the environment?*
- *How are policies currently formulated?*
  - *What provisions are there in the constitution for policy formulation processes?*
  - *What are the different stages which are carried out, who does it and how often?*
- *How are policies co-ordinated across sectors?*
  - *How does this co-ordination take place, what committees etc. are in place to achieve this?*
  - *What role does the small-scale fisheries sub-sector play in this process ?*
- *In what ways can rural people become involved in the processes of policy formulation?*
  - *What authority and responsibility do decentralised structures have in policy decision making?*
  - *In what ways do the local people participate in decision making?*
- *Are there groups and organisations representing particular interests in the policy process?*
  - *Are there associations of producers, trade unions or pressure groups that influence policy and in what way?*
  - *How does the NGO sector influence policy?*

### **International policy**

The international obligations which a country has, may influence the way it makes policy, the content of its policies and the way it implements them. Treaties, conventions, international law, trade relations may all influence policy. They may also specifically affect the small-scale fisheries sub-sector.

- *What agreements does the country have with the international community which affect its domestic policies?*
- *What international trade relations and agreements does the country have which affect its internal policy-making processes?*
- *How does physical proximity to other countries affect policies domestically?*
- *What agreements does the country have with the international community which affect small-scale fisheries?*
  - *In what ways do these interact with the small-scale fisheries sub-sector?*
  - *What implications do these agreements have for the sustainability of the resource?*
  - *To what extent have the small-scale fishworkers been involved in developing these agreements?*
  - *In what ways will obligations under these agreements affect the way policies in the sub-sector are formulated?*
- *What international trade relations and agreements might affect the small-scale fisheries sub-sector?*
  - *Is the country a member of regional trading associations?*
  - *How will changes in international fish trade affect the supply and demand of fish domestically?*
  - *To what extent is formal and informal trade between countries in fish and related inputs to the sub-sector, important to the economy, and what are the factors affecting it?*
- *How does physical proximity to other countries affect the sub-sector?*
  - *Are there significant labour migrations between countries?*
  - *Are aquatic resources shared between countries?*
  - *Does pollution cross boundaries?*
  - *Are there political conflicts in neighbouring countries which might affect the sub-sector?*

### **Sub-national policy**

Within the country there are also a range of administrative levels at which policy may be formulated. Regional and district authorities may have established priorities and strategies which reflect the particular problems facing their particular locality. These may differ markedly from other areas and from the priorities established at the national level. They may all influence the way policy is formulated in small-scale fisheries.

- *To what extent is policy-making decentralised to the regional and district levels?*
- *How do these local policies differ from national policies?*
- *Are the local constraints and development opportunities adequately catered for in these policies?*
- *How does the sub-national policy process affect the small-scale fisheries sub-sector ?*

### **Situation analysis**

Policy is often concerned with bringing about change in the situation which a country or community is in. In order to do so it is necessary to understand the situation which needs to change and how that situation arose. Small-scale fisheries policy needs to be based on a sound analysis of the wider national situation particularly in terms of how this situation affects the sub-sector. An analysis of the current situation should be carried out in terms of the social, environmental and economic conditions to provide a development profile of the country. This profile will provide an essential foundation of knowledge with which to enhance integration between sectors through the harmonisation of strategies (covered in section 5.29). This will require accessing a wide range of information from other sectors. Much of it may already exist in the form of national environmental action plans or national development plans. Some of the data may also exist in databases held by other sectors. Plans for the implementation of *Agenda 21* may also be valuable sources.

- *What are the main environmental features of the country?*
  - *In terms of water resources and use?*
  - *In terms of land resources and use?*
  - *In terms of land/water interactions?*
- *What is the current social situation in the country?*
  - *What demographic factors affect the country?*
  - *What are the factors affecting the social conditions of the population?*
  - *What are the main cultural/ethnic divisions in the country?*
  - *How do the social conditions change through the population and why?*
- *What is the past and current economic situation in the country?*
  - *How has the economy evolved in recent years?*
  - *What are the key contributors to the growth of the economy?*
  - *What are the major economic problems facing the country?*
  - *What are the key economic opportunities for the country?*

## **Development objectives**

A key component of the wider policy framework will be a set of national development objectives. This will generally represent some future position which is hoped will result from the development process. It is important to gain an understanding of the relative priority of these objectives.

The key objectives for development are likely to be formulated in terms of the use of natural resources, human resources, the economy and governance.

- *What objectives exist for the use and development of natural resources?*
  - *Are there specific objectives for environmental sustainability and biodiversity?*
  - *What priorities are established for natural resource use?*
- *What objectives exist for the development of human resources?*
  - *What specific objectives exist to address gender concerns, poverty alleviation, and ethnic minority groups?*
  - *What specific objectives exist for the provision of social services and what priority is given to them?*
- *What objectives exist for overall economic development?*
  - *What macro-economic targets have been set?*
  - *What are the priority sectors for development in the economy?*
  - *What are the targets for private sector development?*
- *What objectives exist for improved governance and institutional organisation?*
  - *What objectives exist for decentralisation?*
  - *What objectives exist for regional development?*
  - *What objectives exist for greater participation and integration of decision making processes?*

## **National constraints**

Another major facet of the national policy framework is the key constraints which are believed to hinder the country from achieving the national objectives. These are constraints which development efforts will be mainly directed at.

- *What are the key constraints limiting the achievement of national development objectives in terms of:*
  - *Natural resources and the state of the environment?*
  - *Social development?*
  - *Economic development?*
  - *Weaknesses in institutional, organisational, governance arrangements?*
  - *External economic and political factors?*

## **5.2 Research and analysis of sectoral and inter-sectoral development policy**

Not only are policies made at the national and regional levels, they are also made within sectors. Whilst these policies may not make direct reference to fisheries, the implementation of those policies may well have an effect on the small-scale fisheries sub-sector. Likewise small-scale fisheries policies may interact with the policies of other sectors. It is therefore important to fully understand what the policies are in other sectors and to identify interactions between policies.

Sectoral policies may also vary between national, regional and district levels.

- *What are the policies of other sectors which could have an impact on small-scale fisheries?*
  - *What are the key sectors which might affect small-scale fisheries such as agriculture, industry, construction, education, large -scale fisheries, forestry, health, housing, mining, social welfare, tourism, transport and communications, and utilities (see sections 5.6, 5.14 and 5.22)?*
  - *What are the key development objectives in each of these and how will they interact with the small-scale fisheries sub-sector?*
  - *What are the major constraints facing these sectors and how do these constraints overlap with small-scale fisheries?*
  - *What are the planned strategies to overcome these constraints and how will they conflict or complement strategies in fisheries?*

These will be particularly important when attempting to resolve conflicts between sectors as discussed in section 5.29.

### **5.3 Research and analysis of small-scale fisheries development policy processes**

*PIP* must be seen in the light of the existing policy framework. Whilst *PIP* aims to change this framework, this change will not occur immediately and must gradually modify the existing policies. To do so it is necessary to fully understand how the government perceives the sub-sector and how it plans to bring about change. This is an important part of the policy framework from which *PIP* must start and evolve.

The small-scale fisheries policy framework will consist of a situation analysis of the sub-sector, an analysis of its potential for contributing to the achievement of national development objectives, a definition of sub-sector development objectives, and an outline of the constraints which will need to be overcome to achieve these objectives.

#### **Situation analysis**

A key part of understanding the policy environment within the sub-sector is to broadly define the current situation. This analysis should include an understanding of the current resource base, the structure and organisation of the sub-sector, past policies, legislation and institutional capacities.

- *What is the resource base of the fisheries sector?*
  - *What are the main marine and freshwater fishing areas by type e.g. rivers, lakes, lagoons, floodplains, ponds, swamps, reefs, reservoirs, or wetlands?*
  - *What are the main species associated with each of these? What is their relative abundance? How much is available for exploitation on a sustainable basis?*
  - *How do they differ in terms of species, abundance, distribution, production, seasonality, and current exploitation levels?*
  - *Is the resource base enhanced through culture based fisheries or through stocking of wild resources?*
- *What is the structure and organisation of the fisheries sector?*
  - *How is the fishery divided between small-scale fisheries, semi-industrial fisheries, and industrial? Are there any foreign fishing vessels operating in the waters?*
  - *What are the characteristics of each group? What gear types, vessels, and shore facilities are used by each?*
  - *Is there any adverse interactions between the different components of the local fleet, or between the local fleet and the foreign fleet? How are these resolved? Is this process effective?*
  - *Are there any community control systems over resource use? How do they operate? What is there interaction with government management systems?*
  - *What are the different characteristics of the fish harvesting, processing and marketing components? What linkages exist between them? What is the social, economic and gender divisions between them?*
  - *What ancillary industries exist in the sector such as boatbuilding; engine supplies and repairers; fuel suppliers; gear making and repair; ice, fuelwood and salt supply; credit provision; and transport operators?*
  - *Is migration a major part of the fishery? How does it affect different groups, the supply of fish, resource management, and interaction between fishing groups?*
  - *To what extent are the fishworkers part-time, full-time, seasonal, or itinerant? What are the implications of this for the sector? How does it interact with activities in other sectors?*
  - *What variations in enterprise structure exist in the different parts of the fishery?*
  - *Are there representative groups in the different areas of the fishery and how do they function?*
- *What are the past policies of the small-scale fisheries sub-sector?*
  - *What has been the evolution of policies over recent decades?*
  - *How successfully have they been implemented?*
  - *What are the main themes?*
  - *To what extent have the fishworkers been involved in defining implementing and monitoring these policies? What mechanisms exist for this to occur? How effective are they?*
- *What support is provided to the sub-sector for its development?*
  - *How is the government support to the sub-sector organised? How are policies translated into laws? What institutional capacity and organisation exists to implement those laws and policies? How effective is it in its work? How is that effectiveness monitored? How does the monitoring feed back into the policy ad planning processes?*
  - *What level of decentralisation exists within government support? How does this affect the sub-sector?*
  - *How is the interaction between fisheries and other sectors co-ordinated and promoted?*
  - *What is the legislative framework which is used to guide that support? Is it suitable for the current situation of the fishery?*
  - *What financial support is provided to the sector from the government, NGO and the donor community? How is that finance planned and co-ordinated? How is its effectiveness monitored?*

### **The current and potential contribution of the sub-sector to the achievement of national development objectives**

The ultimate aim of the small-scale fisheries sub-sector is to maintain or increase its contribution to the achievement of wider national development objectives. These wider objectives were discussed in section 5.1 above. It is important to fully assess how the sub-sector is currently contributing, and can in the future contribute, to these wider objectives. It is particularly important in order to justify and plan support to the sector. Reference should be made to the *PIP Framework Document*, section 4, for more details on the ways in which the sub-sector can contribute to the nation's development.

- *In what ways does the sub-sector contribute to the achievement of national development objectives and how can this be increased in the future in terms of:*
- *Nutrition and food security?*
  - *Poverty alleviation?*
  - *Regional development?*
  - *Employment?*
  - *Creating opportunities for women?*
  - *Sustaining biodiversity?*
  - *Providing opportunities for community based environmental monitoring?*
  - *Supporting the creation of alternative income generating opportunities?*
  - *Contributing to economic growth?*
  - *Maintaining a positive foreign exchange balance?*

### **Current sub-sectoral development objectives**

The objectives which have been defined for the sub-sector need to be understood in the light of this potential to support national development. In many cases these will be vague statements relating to employment, poverty alleviation etc. If these objectives are to form part of a cohesive policy framework it is essential to begin to put these objectives in relative order of priority in terms of what the government wishes to do. In some cases the priority may be specifically ill-defined to allow for local variations in policy. In the main, however, the lack of prioritisation is liable to lead to policy conflicts at a later stage. Some attempts should therefore be made to understand what are the underlying priorities and in what circumstances the achievement of one objective will begin to take precedence over the achievement of others.

It is also necessary to define objectives in terms of indicators which can be used to measure progress towards the achievement of the objective. These indicators should be defined in terms of the quantity, quality and time e.g. a production objective might be

something like: 10,000 tonnes of prime quality eating fish, of 0.5kg individual minimum size, produced annually by the year 2000. The indicators should also *be objectively verifiable*. This means that the indicators can be measured in an objective way. It is important that indicators have certain qualities which increase their ease of use and effectiveness. Indicators should:

- Be simple to understand (simple)
- Be easy to measure (verifiable)
- Be as objective as possible (objective)
- Measure something which is important (relevant)
- Be sensitive enough to measure change (sensitive)
- Measure something specific and not be too pervasive (specific)

From this analysis it is possible to start to create a broad policy framework for the sub-sector which can develop through the *PIP* process to reflect more accurately the needs, aspirations and capacities of the majority of the participants in small-scale fisheries. To do so it is important the framework developed at this stage is flexible enough to allow change as different stakeholders contribute to its evolution.

- *What are the existing objectives for the small-scale fisheries sub-sector?*
  - *How are they measured?*
  - *What order of priority exists for them? How are conflicts between priorities to be resolved?*
  - *Are the objectives for small-scale fisheries separate from those for larger-scale fisheries?*
  - *Are their regional differences in the objectives for small-scale fisheries?*
  - *How were these objectives formulated? Who was involved? How representative of the needs and aspirations of the different stakeholders are they?*
- *How do these objectives link in with national objectives and those in other sectors?*
  - *Are the objectives upgraded in line with changes in national policy?*
  - *What mechanisms exist for harmonising policies between sectors? Is there a policy hierarchy across sectors? Where does small-scale fisheries fit in to this?*
- *What scope is there for changing the current policy framework?*
  - *Is the current policy framework flexible enough to allow a more participatory approach to policy and how can this flexibility be promoted?*
  - *What mechanisms need to be developed to allow this policy evolution to occur?*
- *What are the key components of the revised policy framework for small-scale fisheries?*
  - *What are the broad objectives?*
  - *What are the priorities to be established?*
  - *What are the mechanisms for resolving conflicts?*

### **Constraints facing the sub-sector**

Having defined broadly where the sector is and where it must develop to in order to maximise its contribution to the achievement of national development objectives, it is necessary to identify the constraints which act as a barrier to reaching those objectives. These constraints must be understood in terms of their impact, cause, the consequences of not overcoming them and thus their relative priority, and the likely strategies needed to address them.

These constraints will have different impacts on different groups of people. The poor, for instance, will be affected in different ways to the rich. Women will be affected differently from men. Fish processors will see a problem in a different way to fishermen. Perhaps the biggest difference will be between how the government view a problem and how the fishworkers see it.

The main problems areas which face the sector concern:

- Poor private sector performance

- Poverty
- Environmental degradation

These problems relate to the wider problems associated with economic, social and environmental development of the country. Each of these problem areas is discussed in the sections below.

## 5.4 The private sector and small-scale fisheries

Limited private sector development is one of the most widespread problems facing small-scale fisheries.

Private sector development is concerned with employing natural resources, labour and capital to produce surpluses beyond mere personal consumption or survival. As such it can be thought of as a progression away from poverty towards economic growth. In some cases, however, private sector activity may be a intermittent, carried out to gain income for specific needs such as a wedding, school fees, a new vehicle etc. Such intermittent bursts of activity temporarily change people's motives for using the factors of production but do not lead to sustainable business growth.

This production of surpluses does not necessarily eliminate poverty, for in some cases its production creates poverty and exploits people. It does, however have the *potential* to take certain members of a community beyond subsistence and the alleviation of poverty, towards greater wealth. As such the symptoms and causes of limited private sector development are often similar to the symptoms and causes of poverty. The support which can be provided to overcome the problems faced by the private sector are also similar to those used in support of the poor.

How the needs and aspirations of the private sector conflict with and complement those of the poor will be discussed later. For now it is necessary to understand how the private sector functions.

The private sector refers to those entrepreneurs, employers and employees operating through enterprises not owned by the state. As such the term covers the vast majority of the participants within the sector and naturally there is a wide range of levels of operation from very small to large and complex. The main features of limited private sector development in small-scale fisheries include:

- Few micro-enterprises in the formal sector
- Small size of businesses
- Low survival rate
- Strong wealth and power polarisation
- Low employment opportunities or high under-employment
- Variable, low and often declining profits
- Low levels of capital asset holding
- Low employee wages

- Poor working conditions
- Low economic mobility of labour and capital

It is important to assess the relative importance of all these features of the private sector for each group concerned.

To understand how private sector affects small-scale fisheries it is necessary to place it in the wider context of how private sector affects the country as a whole. Support for the private sector in its widest sense is usually co-ordinated by a specific department such as the Department of Commerce. There may, however, be other projects which address specific issues related to private sector development in specific sectors.

It is important to understand how the private sector generally has been assessed and how support is provided for its development. These will greatly assist private sector analysis in fisheries.

- *What is the local private sector situation?*
  - *How is private sector success and failure defined locally?*
  - *How many enterprises are in the formal and informal sectors?*
  - *What is the average life and size of an enterprise?*
  - *How profitable are the enterprises? What level of asset holdings do they have?*
  - *What are the working conditions like in micro-enterprises? Are they labour intensive?*
  - *What are wage rates like? Is there much mobility of labour?*
  - *What are the consequences for the economy of limited private sector development?*
- *What are the main bodies responsible for supporting private sector development?*
  - *Are there specific departments, agencies or projects directed at private sector development?*
  - *What activities are they currently carrying out? Are they directly involved in fisheries?*
- *What are the causes of limited private sector development?*
  - *Economic?*
  - *Social?*
  - *Environmental?*
- *How does the performance of the private sector vary over time and space?*
  - *Is employment seasonal, periodic, or continuous?*
  - *Where is private sector growth occurring most? In the rural or urban environment? In which regions? In which sectors?*
- *Who are most affected by limited private sector growth?*
  - *Does limited private sector development affect specific groups? Are these groups socially, ethnically, sector, or gender based?*
  - *How do enterprises differ from each other?*
- *What are the main sub-divisions of the private sector in small-scale fisheries?*
  - *What private sector groups exist in fishing, processing, trading and ancillary industries?*
  - *What size and type of enterprises exist? Are they in the formal or informal sectors? What is the size variation and why?*
- *How successful are these enterprises in terms of survival rates, profitability, indebtedness, employee numbers and turnover?*
- *Which groups are specifically involved in the small-scale fisheries private sector?*
  - *In terms of gender, ethnic, wealth, cultural divisions?*

## 5.5 The features of limited private sector development within small-scale fisheries

Having assessed the general private sector situation it is then necessary to address how limited private sector development specifically affects small-scale fisheries. A key part of this will be initially assessing who the different groups are that are involved in private sector operations within the sub-sector and what are their specific characteristics. This is referred to as *stakeholder profiling* or *stakeholder analysis*. Stakeholder profiles aim to separate fishworkers into different groups with common characteristics. In some countries the poor and the private sector will be the same people, in others there will be considerable overlap of the two groups.

Stakeholder profiles aim to separate entrepreneurs and employees in fisheries enterprises into different groups with common characteristics. These characteristics might include their method of work, their level of wealth, their status or position in an enterprise, their ethnic, social or culture background; where they live; or on the basis of gender. It is important to begin to understand how these groups differ from each other because it is likely that their perceptions of the problems they face, how they cope with those problems, what their needs and aspirations are, and what their capacity to bring about change or to cope with change, will all differ and will thus affect how they can be supported by the government or other development agency.

Limited development of the private sector also needs to be assessed in terms of how it specifically affects groups and which groups are specifically affected (particular attention should be paid to how women are affected differently from men).

- *Who are most affected by limited private sector development?*
  - *What are the different groups of stakeholders and how do they differ in terms of their social and economic status, location, work type, gender, needs, aspirations, individual and institutional capacities?*
  - *Does limited private sector development affect stakeholder groups differently and in what ways?*
- *How does limited private sector development appear in these stakeholder groups in terms of the features of enterprises (see section 5.4)?*
- *How does private sector development vary over time and space?*
  - *Is poor private sector performance seasonal, periodic, continuous or in response to disasters?*
  - *Where does poor private sector performance occur most? In the rural or urban environment? in different regions?*

## 5.6 The factors contributing to limited private sector development in small-scale fisheries

The causes of limited private sector development are often difficult to define. Six broad categories of factors contributing to limited private sector development can be identified:

- Resource characteristics
- Macro-economic policies
- Inappropriate or deficient support from development agencies
- Micro-level social, economic and cultural constraints
- Population pressure
- Crises and stress

### **Resource characteristics contributing to limited private sector development**

The level of private sector development is often related to the access which people have to fish resources. This access can be affected by either management measures, natural consequences (such as seasonality, weather, fish migrations), or environmental degradation (see sections 5.20 to 5.22). Another characteristic of the resource is its inherent risk. The fugitive nature of the resource means that returns on investment and labour are uncertain, the physical operating environment is often dangerous, and the perishability of the product increases the risk of handling it. All these factors contribute to the success or failure of small-scale fisheries enterprises.

□ *How do the resource characteristics affect private sector development?*

- *How does the management of fisheries resources affect access to opportunities by different groups? How does this change over time?*
- *Are there conflicts of access between different groups (gear groups or between industrial/small-scale)? How does this affect small-scale private sector development?*
- *To what extent does environmental degradation affect access to resources and how does this impact on private sector development in different groups?*
- *Is resource availability predictable from month to month and year to year? How does this affect income/profitability in different enterprises?*
- *Is the physical environment considered high risk and how does this affect security of assets and profitability?*
- *Is the high perishability of the product a major constraint to post-harvest activities? How does this impact on profitability and risk?*

### **Macro-policies contributing to limited private sector development**

Macro-economic policies are often developed without specific reference to fisheries and they frequently conflict with the needs of the sector. They often place unnecessarily harsh burdens on the operation of the private sector and dissipate investment resources. Often government departments dealing with fisheries do not have the capacity to make inputs into macro-level policies and those making macro-policies rarely reflect sufficient understanding of fisheries.

#### *How do macro-economic policies affect private sector development?*

- *In what way do fiscal, monetary, exchange rate, trade, private sector, employment and foreign investment policies affect enterprises in the small-scale fisheries sub-sector?*
- *How do these policies affect the development of enterprises in the different stakeholder groups?*
- *Do national policies in adjacent countries affect labour mobility and resultant employment and investment by businesses?*
- *To what extent have structural adjustment and other macro-economic changes in government resulted in retrenched employees going into the fisheries sector?*

### **Lack of development agency support contributing to limited private sector development**

In many countries the government staff responsible for the development of fisheries have been trained as biologist or technologists. This reflects the past emphasis on production and management of the resource. Few fisheries departments are well equipped with staff who understand or can deal with policy processes, or social and micro-economic issues. As a consequence the private sector are often poorly catered for. There is often a poor understanding of the motives, operations, problems and possibilities of these enterprises and as a consequence they are often poorly supported.

The support services of other departments which deal with the private sector are also rarely well equipped to deal with the special needs of business in the small-scale fisheries sub-sector. This is particularly acute in credit delivery agencies. NGO staff are often well equipped to work with communities, especially if the NGO originates from the community level, but they are often poorly equipped to deal with the technical issues of fisheries.

Often there are biases within government which may focus more on the needs of the formal, large-scale export-oriented enterprises. These biases result in poor levels of support going to the small-scale fisheries sub-sector and to the minority or less powerful groups in particular. In some cases state-run enterprises operate in direct competition with the private sector or introduce distortions in the market place which affect the viability of sub-sector operators.

- *How does government support affect the development of the private sector?*
- *What institutional capacity exists in those departments dealing with fisheries to understand and respond to private sector needs in small-scale fisheries?*
  - *Are other departments/projects, which may be specifically designed to develop the private sector, able to cope with the specific needs of small-scale fisheries?*
  - *What policy biases exist in government support in relation to gender, urban/rural emphasis, export-orientation, focus on the formal sector, large-scale development (national and foreign), and production-orientation? How do these biases affect different groups in relation to private sector development?*
  - *To what extent do state-run credit schemes fully address the needs of small-scale fisheries enterprises?*
  - *To what extent are the private sector encouraged and supported in participating in formulating and implementing policy in small-scale fisheries?*
  - *How extensive are state-run enterprises in fisheries? In what ways do these interfere with the development of the private sector? What measures are being taken to transfer greater responsibilities to the private sector?*
  - *How appropriate is the legislative environment for the development of the private sector? How has this constrained the development of micro-enterprises?*
  - *To what extent are fisheries departments able to relate to the NGO sector or to support grassroots micro-enterprise organisations?*

#### **Micro-level factors contributing to limited private sector development**

At the micro-level there are a wide range of social, economic, cultural, and gender biases which affect the way the private sector can develop.

These affect the structure, organisation, ownership and operation of the private sector. They also affect the working conditions of the employees. These issues are often poorly understood by development agents and are rarely addressed well.

- *How do micro-level factors affect private sector development?*
- *To what extent does the lack of private sector growth opportunities limit private sector development?*
  - *To what extent does the lack of alternative employment opportunities affect wage rates?*
  - *How well organised is the small-scale private sector? Does a lack of organisation constrain its development?*
  - *How does the availability of suitable sources of credit affect private sector in different groups?*
  - *Are there strong debt and obligation linkages between different groups? How do these affect private sector development?*
  - *How does market access affect different enterprises?*
  - *How does the type of technology and infrastructure used in the sector affect employment and private sector development?*
  - *How do community-level ethnic, cultural, gender and social biases affect private sector development?*
  - *How do community-level authority structures affect private sector development?*
  - *Do social and economic levelling mechanisms exist to redistribute power and wealth? How do they affect private sector development?*
  - *To what extent does poor business management and low labour productivity affect private sector development?*
  - *To what extent do low or intermittent material demands within society affect the potential development of the private sector?*
  - *How does periodic migration of fishermen in search of fish affect conflict with non-migratory fishermen and with fish processors and traders? How are women affected by migrations?*

**Population pressure, crises and stress contributing to limited private sector development**

Population pressure can add to the problems of both entrepreneurs and employees. An inward migration of people or natural population growth can mean that labour supply exceeds demand and wages and working conditions fall. Likewise, more people trying to run fishing, processing and trading activities means that there are fewer resources for each.

Natural disasters, disease, political unrest or conflicts all raise the risks inherent in operating a business. In some limited circumstances they may give rise to expanded opportunities in the market place but this is rarely achieved without additional risk.

- *How does population increase affect private sector development?*
- *How do crises and stress affect private sector development?*
  - *To what extent does conflict affect private sector development?*
  - *How does political instability affect the operating environment of the private sector?*
  - *Do fishing communities suffer from above average rates of particular diseases (especially water borne) which affect labour productivity? Which groups are most affected and how?*
  - *How do natural disasters (drought, floods, earthquakes) affect private sector development?*

## 5.7 Defining the needs, aims and strategies of stakeholders in relation to private sector development

### Aims and aspirations

Whilst it is possible from the above checklist to begin to identify a range of factors limiting private sector development, it is essential that the different stakeholder groups are involved in identifying which of these factors are most important to them.

Different stakeholders in the community are likely to have distinctly different aspirations for their entrepreneurial activity. Some may only wish to operate commercially for a limited time to obtain money for specific purposes, or they may have low material needs. Others may be more concerned with growth and increasing profitability.

If their aspirations are not clearly defined it is likely that development agents will try to achieve objectives which clash with those of the fisherfolk resulting in conflict and wasted resources. Understanding these differences will require establishing close dialogue with the different groups to identify their needs and aspirations.

- What are the business development needs of the different groups?*
  - *What are their long-term aims of each stakeholder group in relation to private sector development? What features of limited private sector development do they wish to address first?*
  - *What are the key problems faced by the different groups (groups based on differences in technology, ethnicity, gender as well as business size/type)? How do these priorities differ between groups and why?*
- What are the capacities of the different groups to deal with problems?*
  - *Are the groups able to cope with these different problems and if not what support do they feel they need from outside?*
  - *How do skill levels and organisation vary between groups?*

### Stakeholder coping strategies to deal with resource characteristics

Different groups learn to cope with the problems they face as entrepreneurs and employees in different ways. It is important to understand these coping strategies as they will affect the type of strategy which the development agency can adopt to assist the particular group.

Coping strategies may be developed to address each of the factors contributing to limited private sector development. Those used to address resource characteristics may involve increasing fishing activities, changing fishing practices or shifting reliance towards other sectors. In other cases they may try to make better use of the limited production through enhanced post-harvest activities.

- *What strategies have different enterprises developed to cope with the resource characteristics?*
  - *Do they increase/decrease fishing effort to cope with resources shortages?*
  - *In what ways have their time horizons changed in relation to the environment degradation?*
  - *Have they diversified into other economic activities in response to resource shortages or seasonality?*
  - *Has seasonal or periodic decline in availability of fish led to migrations of both labour and capital to new areas?*
  - *Has seasonal or periodic decline in availability of fish led to enterprises reducing employment? Which groups of employees have been most affected?*
  - *Have resource shortages led to renewed interest in community control of resources (such as local regulations or enforced property rights)? How has this happened? What measures have been taken? How successful have these been?*
  - *How have shortages in the availability of fish affected attitudes towards, and use of, other common property resources (such as trees or grazing land)?*
  - *How has the perishability of product affected processing and marketing practices?*
  - *Have resource shortages led to changes in target species or to more sophisticated post-harvest practices to enhance product worth?*

#### **Stakeholder coping strategies to deal with inappropriate macro-level policies**

Where macro-economic policies are adverse, the options for change are generally few.

- *What strategies have different stakeholder groups developed to cope with adverse macro-economic policies?*
  - *Have fishworkers moved into other more favourable sectors?*
  - *Have they placed greater reliance on moving business activities into the informal sector activities to avoid the controls of government? How have they done this?*
  - *Have they represented their views on these policies in an organised way? How effective have they been?*
  - *Have import policies caused a shift in the use of local inputs to the sub-sector?*
  - *Have employment policies resulted in a reduction of the number of employees?*
  - *Has there been much systematic avoidance of regulation?*

### **Stakeholder coping strategies to deal with a lack of development agency support**

A lack of support from development agencies has often adversely affected the development of informal micro-enterprises. In some circumstances this has resulted in private sector taking over the role of government in providing these services.

- *What strategies have different stakeholder groups/enterprises developed to cope with poor support from development agencies?*
  - *Have they placed greater reliance on community support mechanisms? How have these functioned?*
  - *Has there been any movement of activities to other sector where support for private sector development is more appropriate to their needs? How effective has this been?*
  - *Has there been a concerted effort to bypass government regulations (such as fishing restrictions)?*
  - *How have grassroots organisations been used to compensate for deficiencies in support?*

### **Stakeholder coping strategies to deal with micro-level constraints**

Micro-level constraints can be overcome by a range of changes in both individual and group behaviour.

- *What strategies have different stakeholder groups developed to cope with micro-level constraints ?*
  - *Has there been movement of labour and capital out of fisheries in response to static development options in the sub-sector?*
  - *To what extent do fishworkers migrate to find alternative employment opportunities?*
  - *Has there been a greater involvement of children in the labour force to allow private sector development or to compensate for falling wages? Has there been a general increase in the use of family labour to compensate for falling profits?*
  - *What role do informal savings and credit mechanisms play amongst micro-enterprises in the sub-sector? How effective are they at allowing growth?*
  - *To what extent have debt and obligation linkages been formed or extended to allow for micro-enterprises to survive or expand? What have been the impacts on the enterprises?*
  - *Have existing technologies been adapted to suit specific needs of micro-enterprises?*
  - *Has there been any migration of either labour or capital to avoid community levelling mechanisms?*

### **Stakeholder coping strategies to deal with population pressure and disasters**

Population pressure and crises can either pull communities together or force them apart. In many cases people trade their long-term comfort and security for short-term survival.

- *What strategies have different stakeholder groups/enterprises developed to cope with increasing population?*
  - *Has there been movement out of fisheries in response to rising population?*
  - *To what extent do fishworkers migrate to find alternative employment opportunities?*
  - *To what extent have traditional systems been used to avoid or resolve resource conflicts?*
  - *Has there been a greater use of levelling mechanisms to redistribute scarce resources ?*
- *What strategies have different stakeholder groups developed to cope with crises and stress?*
  - *Has there been a resurgence of community self-help mechanisms?*
  - *To what extent do fishworkers migrate to avoid conflict/crisis?*
  - *Has there been movement to other sectors to avoid conflict?*

## 5.8 The consequences of continued limited private sector development in small-scale fisheries

If the development of the private sector development continues at a low level it may well have an adverse effect on the achievement of national development objectives. It is important to assess how poor private sector development will affect these objectives so that priorities for action can be identified.

*To what extent will limited private sector development in the sub-sector affect:*

- *Nutrition and food security?*
- *Poverty alleviation?*
- *Regional development?*
- *Employment?*
- *Creating opportunities for women?*
- *Sustaining biodiversity?*
- *Providing opportunities for community based environmental monitoring?*
- *Supporting the creation of alternative income generating opportunities?*
- *Contributing to economic growth?*
- *Maintaining a positive foreign exchange balance?*

Reference should also be made to both section 5.3 above and to section 4 of the **Framework Document** for further information.

## 5.9 Defining priority factors to be addressed

From the dialogue established with the fishing community it is possible to identify what are considered to be their main problems (see section 5.7). Section 5.8 enabled us to begin to understand what the consequences of doing nothing about these problems are liable to be for the achievement of national development objectives. On the basis of these two assessments it should be possible to place some relative priority on solving the different problems.

Defining priority will not be easy. It may require priorities to be different in different locations. It may also require that priorities change over time so that the needs and aspirations of different groups change in importance as their problems become solved.

These priorities will then form an important part of the policy framework.

- What are the relative priorities of the factors limiting private sector development which need to be addressed to:*
  - *Maximise the sustainable benefits to the nation?*
  - *Maximise the sustainable benefits to the different stakeholder groups and enterprises?*
- How can these priorities be harmonised to maximise the benefits overall?*
  - *Is there a need for different local priorities?*
  - *How can the priorities be changed over time?*

## **5.10 Strategy options for stimulating private sector development in small-scale fishing communities**

Having identified the priority problems which need to be addressed it is important to look at the range of options which are available to overcome these problems.

It is important to assess these options carefully as the most obvious strategies are not always the best. It is also important to assess the widest possible range of options because these will all need to be discussed with the stakeholder groups to see which are the most appropriate to combine with their coping strategies and their capacities for change. As different groups will have different perceptions of the relative priority of constraints, different coping strategies, different aims and aspirations, and different capacities for change, it will be important to keep an open mind as to which strategy options are appropriate for each group at any particular time.

### **Strategies for overcoming limited private sector development caused by resource characteristics**

Strategies aimed at the factors resulting from resource characteristics focus principally of controlling the use of the resource, distributing access to the resource between different groups and reducing the risks inherent in using the resource. The management of fisheries is one of the main areas where government development agencies have been involved in mitigating the adverse resource characteristics. This has, however, very often failed or proved costly to implement. Assisting communities to redirect their fishing effort to less threatened resources or to maximise the financial returns on the harvest through improved post-harvest activities, are also important.

- *How can resource planning and management be improved ?*
  - *How can licensing, quotas, species restrictions, technical restrictions, seasonal restrictions, taxes, rents, closed areas or the creation of property rights be used?*
  - *Will this improve the sustainable availability of resources to allow private sector development?*
  - *How can government and traditional management systems operate together?*
  - *How can improved practices be introduced which lessen the adverse effects on the stocks or redirect effort to more abundant species?*
- *How can post-harvest utilisation be improved to increase the benefits per unit of production?*
  - *How can onboard handling and preservation be improved?*
  - *How can onshore perishability be reduced?*
  - *How can products be developed to add value?*
  - *How can new markets be developed or accessed?*
  - *How can transportation costs be reduced?*
  - *How can improved quality standards be improved?*
- *Is it possible to increase preferential resource access for micro-enterprises be achieved?*
  - *How can the small-scale operators be separated, and protected from, the large-scale operators (both domestic and foreign)?*
  - *Can fishing opportunities be transferred from large-scale to small-scale operators?*
- *How can environmental degradation be reduced?*
  - *Is there a need to increase the understanding of existing degradation?*
  - *How can inter-sectoral environmental co-ordination be improved?*
  - *Is there potential for better use of environmental impact assessments?*
  - *Is it possible to rehabilitate degraded environments?*
- *Can the resource base be expanded?*
  - *How can floodplain stocking be used to enhance the natural resource ?*
  - *How will the poor be ensured of access to expanded resources?*
  - *What will be the other environmental impacts of resource enhancement? How will this affect the different groups of micro-enterprises?*
- *How can the risks inherent in the use of fisheries resources be reduced?*
  - *Is it possible to develop alternative income generating opportunities to combat seasonal resource shortages?*
  - *To what extent can community-based insurance schemes be developed to overcome the risks of the sub-sector?*
  - *Can practices be improved to reduce post-harvest risks (such as perishability, health, fire etc.)?*

### **Strategies for overcoming limited private sector development caused by macro-economic policies**

These strategies consist mainly of measures to adjust wider policies so that they take into consideration the specific needs of micro-enterprises in the small-scale fisheries sub-sector.

- How can monetary policies be adjusted to suit the needs of micro-enterprises in small-scale fisheries?*
  - *How can interest rates be adjusted?*
  - *How will changes in inflation affect the sub-sector?*
  - *How will changes in credit availability affect micro-enterprises?*
- How can fiscal policies be adjusted to assist the private sector?*
  - *What is the tax system for fuel, imported engines and spares, nets,? How can this be adjusted to specifically support the poor?*
  - *What formal taxes apply to micro-enterprises? How do they affect the small-scale fisheries sub-sector?*
  - *How large is government spending on the sub-sector relative to other sectors and could this be improved?*
- How can pricing policy be adjusted to support the small-scale fisheries sub-sector?*
- How can exchange rate policies be adjusted to benefit inputs to the sub-sector or to encourage exports?*
- How can the export and production focus of policies be adjusted to sustain resources rather than promote the continued expansion of exploitation?*
- How can the export and production focus of policies be adjusted to avoid conflict between small-scale fisheries and industrial fisheries?*
- How can the policy emphasis in the rural environment be adjusted to focus on increasing opportunities for micro-enterprises?*
- How can policies towards privatisation of state-run enterprises be adjusted to involve the small-scale private sector?*

### **Strategies for overcoming limited private sector development caused by limited support from development agencies**

Many of the strategies aimed at overcoming the lack of support from development agencies are concerned with institutional strengthening and awareness raising.

- *What are the institutional weaknesses in the fisheries departments and NGOs, and how can they be overcome?*
  - *How can awareness and skills be improved in relation to assisting the small-scale private sector?*
  - *How can the skills and support systems be developed which address the needs of specific groups such as the old, the very young, the ethnically disadvantaged and women?*
- *How can the policy and planning of government, in relation to private sector development, be improved?*
  - *How can policy and planning skills and systems be improved?*
  - *How can the targeting of policies towards micro-enterprises be improved?*
  - *How can the entrepreneurs and employees be more effectively involved in decision-making and policy?*
- *How can the skills and support systems be developed which address the needs of specific micro-enterprises*
- *How can awareness of the needs of small-scale fisheries enterprises be raised in other ministries dealing with private sector development?*
- *How can legislation be reformulated to better cater for the needs of the small-scale private sector?*

**Strategies for overcoming limited private sector development caused by micro-level constraints**

Many of these strategies consist of building up local capacity to cope with problems. In many cases the government staff with the skills to understand these problems and to address them will be lacking in the fisheries departments. In some cases NGOs or other departments will be better suited to address these problems but may lack technical skills.

- *In which areas of the sector can growth opportunities be identified and promoted for the small-scale private sector?*
- *How can grassroots organisations in support of micro-enterprises be enhanced?*
  - *Do existing organisations cover the needs of all stakeholder groups and enterprise types?*
- *How can informal credit systems be made more effective?*
  - *How can group savings and credit schemes be enhanced?*
  - *How can the transaction costs of supplying credit to informal micro-enterprises be reduced?*
- *How can access to appropriate technologies and infrastructure for small-scale enterprises be improved?*
- *How can employment conditions be improved?*
  - *Can more labour intensive technologies be employed?*
  - *How can working conditions and wages be improved?*
  - *How can alternative (non-fisheries) income generating opportunities be developed to increase employment options for employees in the sub-sector?*
  - *How can labour productivity be improved?*
- *How can specific marginalised groups be better supported in micro-enterprise formation and operation?*
  - *How can women be specifically supported?*
  - *How can marginalised groups be encouraged to participate more in decision-making?*
- *How can community-based development approaches be used to stimulate private sector development where individual material demands are low?*
- *How can NGOs and government work more effectively together in support of the private sector?*
  - *Can government provide direct support to NGOs to help implement policies?*
  - *Can NGOs become more involved in the decision-making processes?*
  - *Can more research and development work be sub-contracted to NGOs and the private sector?*
  - *Can NGOs, the government and the private sector provide each other with training in areas where skills are lacking?*

### **Strategies for overcoming limited private sector development caused by population pressure**

The main strategies involved in overcoming population-induced problems relate to private sector development concerning diversification into alternative investment and employment opportunities.

- To what extent are alternatives available for labour and capital?*
  - *What opportunities exist for expanding the resource base in favour of the small-scale private sector? Can resource opportunities be transferred from the large-scale sub-sector?*
  - *What opportunities are there outside of fisheries?*
  - *How can local management of the resource by the small-scale private sector be enhanced?*
  - *What role can better post-harvest utilisation play in creating employment?*
- How can inward migrants be controlled from entering the fishery?*
  - *How can local management of the resource by fishworkers be enhanced?*
  - *What alternative income earning opportunities can be created for the migrants?*

### **Strategies for overcoming limited private sector development caused by crises and stress**

Crises and stress are often periodic occurrences. Strategies often involve improved disaster support from government. In the long-term, however, strategies need to reduce the vulnerability of the small-scale private sector and build up their capacity to cope more effectively with disaster.

- How can disaster support to micro-enterprises be improved?*
  - *Are disaster relief plans capable of dealing with the needs of the remote, rural enterprises?*
  - *How can micro-enterprises be made more aware of how to access relief?*
- How can the vulnerability of micro-enterprises be reduced?*
  - *What mitigating measures can be taken to reduce the frequency, duration and extent of disasters?*
  - *How can the awareness of disasters be increased? Can early warning systems be improved?*
  - *How can the capacity of micro-enterprises to deal with disasters be increased?*
  - *How can group-based insurance schemes assist in reducing the adverse effects?*

## **5.11 Identifying conflicts between sub-sector strategies and participant coping strategies to develop the private sector, and harmonising them**

### **Conflicts between strategies**

Having identified a range of development options to address the problems of limited private sector development in small-scale fisheries communities, it is essential to identify where these support strategies might conflict with the coping strategies of the private sector itself.

Identifying these conflicts and resolving them must be done in a participatory way which ensures the involvement of all the different stakeholder groups. It is important to realise that different stakeholders will have different coping strategies to deal with a given constraint. It is thus important to understand how support strategies will affect different groups and different levels of enterprise development.

- *How will resource related support strategies conflict with coping strategies?*
  - *How will increasing control over resources conflict with commercial wishes to expand fishing activities when resources are scarce?*
  - *How will government controls over fishing activities conflict with community management measures?*
  - *How will creating, sustaining or increasing the use of property rights affect the access of micro-enterprises to fishing resources?*
  - *Will providing micro-enterprises with preferential access to resources generate conflict with other resource users?*
  - *Will expanding fishing opportunities for micro-enterprises increase inward migrants to the fishery?*
- *How will adjustments to macro-policies conflict with community coping strategies?*
  - *Will they generate conflicts between different enterprise levels and if so, how?*
  - *How will welfare transfers affect labour and product markets?*
  - *How will changes in employment policy affect local job opportunities?*
- *How will improved support capacity of development agencies conflict with community coping strategies?*
  - *Will improved participation, of employees and/or entrepreneurs of micro-enterprises, in policy-making threaten traditional structures?*
  - *How will greater involvement of women in decision-making be accepted by male elites?*
- *How will overcoming micro-level constraints conflict with community coping strategies?*
  - *Will such support lead to a breakdown in traditional power structures? How will this affect the different enterprise groups?*
  - *Will support for co-operative action break down traditional support systems/ linkages between large-scale and small-scale enterprises, or vertical linkages between activities?*
- *How will overcoming population-related constraints conflict with community coping strategies?*
- *How will overcoming disaster-related constraints conflict with community coping strategies?*
  - *Will short-term support increase the vulnerability of micro-enterprises to disasters in the long-term?*
- *How will these conflicts differ between stakeholder groups and enterprise levels?*

### **Harmonising strategies**

In spite of these potential conflicts, there is considerable scope for harmonising support strategies with community coping strategies to reduce or eliminate conflict. This requires

close dialogue between development agents and primary stakeholders to gradually harmonise strategies.

- *How can strategies to overcome resource-related constraints be harmonised?*
  - *How can government and the community work together to come up with resource management strategies which both sides support and co-operate on during implementation?*
  - *How can micro-enterprises be effectively incorporated into such management programmes?*
  - *How can alternative income earning opportunities for capital and labour in the fishery be increased simultaneously with additional controls on access to resources?*
  - *How can the private sector be more actively involved in environmental monitoring systems?*
  - *How can environmental rehabilitation programmes employ the small-scale private sector?*
  - *How can the private sector contribute to a better understanding of inter-sectoral co-ordination in resource management?*
  - *Can the private sector be encouraged to reduce harvesting of over-exploited resources in the medium-term to allow resources to be replenished? How can they be supported in moving their harvesting focus to less threatened species?*
  - *Can post-harvest technologies/practices be adapted to specifically suit the needs of micro-enterprises?*
  - *Can migration between fishing areas be controlled but made reciprocal?*
- *How can strategies to overcome constraints related to macro-level policies be harmonised?*
  - *Can policies be redirected towards small-scale rural and informal micro-enterprises?*

- *How can strategies to overcome constraints related to poor development agency support be harmonised?*
  - *How can the small-scale private sector be more actively involved in decision-making?*
  - *How can NGOs and government be more effectively support each other?*
  - *Can grassroots organisations be better supported by development agencies?*
- *How can strategies related to micro-level constraints be harmonised?*
  - *How can support be provided to all strata in the community to reduce conflicts?*
  - *How can informal community organisations be strengthened?*
  - *How can informal credit and savings schemes be linked to more formal credit systems?*
- *How can strategies to overcome constraints related to population pressure and disasters be harmonised?*
  - *How can community self-help systems be strengthened through government support?*
  - *How can communities be more involved in planning disaster relief?*

## **5.12 Poverty and small-scale fisheries**

Many of the problems and possibilities affecting the area of poverty in small-scale fisheries are similar to those affecting private sector development. As such, much of the research area covered in sections 5.12 to 5.19 parallel those dealt with in the previous sections. This is because the poor and the private sector exist on the same continuum of wealth and power. What affects one end of the continuum also affects the other. It is important to realise, however, that the way different people along the continuum are affected, will be different. The relative importance of the factors causing poverty or limiting private sector development will differ. The strategies used will also differ both in their effects and impacts, and also their relative suitability in a given situation.

Poverty is one of the most widespread problems facing small-scale fisheries. Poverty, however, means different things to different people. It is generally not measured just in terms of how much money someone has. It also reflects the level of assets which they have (such as house, car, cattle, spare clothes); how alienated they are from the processes which go on around them and which affect their lives; how dependent they are on others or the state; how vulnerable they are to changes in their lives (political, social, economic or environmental); or how insecure they are. It is important to assess the relative importance of all these components of poverty for each group concerned.

To understand how poverty affects small-scale fisheries it is necessary to place it in the wider context of how poverty affects the country as a whole. The current poverty situation is likely to have been assessed by specific projects which have defined what poverty means in relation to the local people and economy, identified broad causes of it, have assessed its distribution, defined who are affected by poverty and have developed poverty alleviation strategies. It is important to understand these as they will greatly assist poverty analysis in fisheries.

- *What is the local poverty situation?*
  - *How is poverty defined locally? How is it measured in terms of material deprivation, assets, alienation, dependence, vulnerability, and insecurity?*
  - *What are its consequences for the economy ?*
- *What are the main bodies responsible for defining and alleviating poverty?*
  - *Are there specific departments, agencies or projects directed at poverty alleviation?*
  - *What activities are they currently carrying out? Are they directly involved in fisheries?*
- *What are the causes of poverty?*
  - *Social?*
  - *Economic?*
  - *Environmental?*
- *How does poverty vary over time and space?*
  - *Is poverty seasonal, periodic, continuous or in response to disasters?*
  - *Where does poverty occur most? In the rural or urban environment? in different regions?*
- *Who are most affected by poverty?*
  - *Does poverty affect specific groups? Are these groups socially, ethnically, sector, or gender based?*
  - *How do different poor groups differ from each other?*
- *What poverty alleviation strategies have been developed?*
  - *Are these general or sector-specific?*
  - *How do they affect small-scale fisheries?*

### 5.13 The features of poverty in small-scale fisheries

Having assessed the general poverty situation it is then necessary to address how poverty specifically affects small-scale fisheries. A key part of this will be initially assessing who the different groups are that are involved in the sub-sector and what are their specific characteristics. This stakeholder profiling will follow on from the profiling carried out for the private sector in the sections above (see section 5.5). The characteristics of different groups of poor might include their method of work, their level of wealth or poverty, their ethnic, social or culture background; where they live; or on the basis of gender. It is important to begin to understand how these groups differ from each other because it is likely that their perceptions of the problems they face, how they cope with those problems, what their needs and aspirations are, and what their capacity to bring about change or to cope with change, will all differ and will thus affect how they can be supported by the government or other development agencies.

Poverty also needs to be assessed in terms of how it specifically affects groups, which groups are specifically affected (particular attention should be paid to how women are affected differently from men), and how it can best be dealt with .

- Who are most affected by poverty in the small-scale fisheries sub-sector?*
  - *What are the different groups of stakeholders and how do they differ in terms of their social and economic status, location, work type, gender, needs, aspirations, individual and institutional capacities?*
  - *Does poverty affect stakeholder groups differently and in what ways?*
- How does poverty appear in these stakeholder groups in terms of material deprivation, assets, alienation, dependence, vulnerability, and insecurity?*
- How does poverty vary over time and space?*
  - *Is poverty seasonal, periodic, continuous or in response to disasters?*
  - *Where does poverty occur most? In the rural or urban environment? in different regions?*

## 5.14 The factors contributing to poverty in small-scale fisheries

The causes of poverty are often difficult to define. Often it is not one factor which causes poverty but a combination of many factors giving a complex network of causes. It is necessary, however, to begin to separate out those factors which seem to contribute most to either creating or sustaining poverty. Six broad categories of factors can be identified, these are the same as those limiting private sector development:

- Resource characteristics
- Macro-economic policies
- Inappropriate or deficient support from development agencies
- Micro-level social, economic and cultural constraints
- Population pressure
- Crises and stress

### Resource characteristics contributing to poverty

Poverty is often related to the access which people have to fish resources. This access can be affected by either management measures, natural consequences (such as seasonality, weather, migrations), or environmental degradation (see sections 5.20 to 5.22). Another characteristic of the resource is its inherent risk. The fugitive nature of the resource means that returns on investment and labour are uncertain, the physical operating environment is often dangerous, and the perishability of the product increases the risk of handling it.

#### How do the resource characteristics affect poverty?

- *How does the management of fisheries resources affect access to opportunities by different groups?*
- *Are their conflicts of access between different groups? How does this affect poverty?*
- *To what extent does environmental degradation affect access to resources and how does this impact on poverty in different groups?*
- *Is resource availability predictable from month to month and year to year? How does this affect income and survival in different groups?*
- *Is the physical environment considered high risk and how does this affect security of assets and livelihoods?*
- *Is the high perishability of the product a major constraint to post-harvest activities? Who is affected most by this?*

### **Macro-policies contributing to poverty**

Macro-economic policies are often developed without specific reference to fisheries and they frequently conflict with the needs of the sector. This may have a particularly devastating affect on the poor who may not have the capacity to respond to policy changes.

#### *How do macro-economic policies affect poverty?*

- *In what way do fiscal, monetary, exchange rate, trade, private sector, pricing, employment, environmental, and foreign investment policies affect the small-scale fisheries sub-sector?*
- *Have employment policies resulted in increased unemployment or under-employment? Which groups have been affected?*
- *How do these policies affect poverty in the different stakeholder groups?*
- *Do national policies in adjacent countries affect labour mobility and resultant employment and investment by the poor?*
- *How stable is the policy environment?*
- *What facilities and support are available to assist the poor overcome policy changes?*

### **Lack of development agency support contributing to poverty**

Government staff in many fisheries departments do not have the skills to identify or deal with poverty-related issues (see section 5.6 above). Whereas NGOs can be more receptive to problems they rarely have the fisheries-related skills to deal with the problems. The support services of other sectors, such as health, education, welfare, transport, are not usually geared to the specific, and often quite unique, needs of fishworkers with the consequence that they receive low levels of support.

□ *How does government support affect poverty?*

- *What institutional capacity exists in those development agencies dealing with fisheries to understand and respond to poverty in small-scale fisheries?*
- *Are other departments/projects, which may be specifically designed to address poverty, able to cope with the specific needs of small-scale fisheries?*
- *Are sectors such as health, education, welfare, commerce and transport able to adjust their support to address the specific needs of poorer groups in small-scale fisheries?*
- *What policy biases exist in government support in relation to gender, urban/rural emphasis, export-orientation, focus on the formal sector, large-scale development, and production-orientation? How do these biases affect different groups in relation to poverty?*
- *To what extent are the poor encouraged and supported in participating in formulating and implementing policy in small-scale fisheries?*
- *To what extent are fisheries departments able to relate to the NGO sector or to support grassroots organisations?*
- *How skilled are NGOs at dealing with fisheries related issues?*

**Micro-level factors contributing to poverty**

At the micro-level there are a wide range of social, economic, cultural, and gender biases which affect the way poverty appears in different stakeholder groups.

□ *How do micro-level factors affect poverty?*

- *To what extent does the lack of alternative income generating opportunities (work outside of fisheries) create and sustain poverty?*
- *How does the availability of suitable sources of credit affect poverty in different groups?*
- *Are there strong debt and obligation linkages between different groups? How do these increase or alleviate poverty?*
- *How does market access affect different groups?*
- *How does the type of technology and infrastructure used in the sector affect employment and poverty?*
- *How do community-level ethnic, cultural, gender and social biases affect poverty?*
- *How do community-level authority structures affect poverty?*
- *Do social and economic levelling mechanisms exist to redistribute power and wealth? How do they affect poverty?*
- *How does periodic migration of fishermen in search of fish affect conflict with non-migratory fishermen and with fish processors and traders? How are women affected by migrations?*

**Population pressure and disasters contributing to poverty**

Poverty is often related to access to resources or opportunities. As local populations rise so pressure on these resources affects groups differently. This is further complicated when natural disasters, disease, political unrest or conflicts arise.

□ *How does population pressure affect poverty?*

- *How does natural population increases affect poverty?*
- *How does migration (inward or outward) affect poverty?*

□ *How do crises and stress affect poverty?*

- *To what extent does conflict affect poverty?*
- *Does political instability affect poverty in fishing communities?*
- *Do fishing communities suffer from particular diseases (especially water borne) which affect poverty? Which groups are most affected and how?*
- *How do natural disasters (drought, floods, earthquakes) affect poverty?*

## 5.15 Defining the needs, aims and strategies of stakeholders in relation to poverty

### Aims and aspirations

Whilst it is possible from the above checklist to begin to identify a range of factors contributing to poverty, it is essential that the different stakeholder groups are involved in identifying which of these factors are most important, how these groups are affected and how they cope with the problems. This will involve establishing a dialogue with the different groups to identify their needs and aspirations. If this is not done the adverse consequences can be severe (see section 5.7).

#### *What are the needs of the different groups?*

- *What are their long-term aims of each stakeholder group in relation to poverty? What features of poverty do they wish to address first?*
- *What are the key problems faced by the different groups? How do these priorities differ between groups and why?*
- *What are the capacities of different groups to deal with problems?*
- *Are the groups able to cope with these different problems and if not what support do they feel they need from outside?*
- *How do skill levels and organisational capacity vary between groups?*

### Stakeholder coping strategies to deal with resource characteristics

Different groups learn to cope with the problems they face in different ways. It is important to understand these coping strategies as they will affect the type of strategy which the development agency can adopt to assist the particular group.

Coping strategies may be developed to address each of the factors contributing to poverty. Those used to address resource characteristics may involve increasing fishing activities, changing those activities or shifting reliance towards other sectors.

- *What strategies have different stakeholder groups developed to cope with the resource characteristics?*
  - *Do they increase/decrease fishing effort to cope with resources shortages?*
  - *In what ways have their time horizons changed in relation to the environment degradation?*
  - *Have they diversified into other economic activities in response to resource shortages or seasonality?*
  - *Has seasonal or periodic decline in availability of fish led to migrations to new areas?*
  - *Have resource shortages led to renewed interest in community control of resources? How has this happened? What measures have been taken? How successful have these been? Have the poor been involved?*
  - *Have resource shortages led to a shift in target species?*
  - *How have the shortages in availability of fish affected attitudes towards, and use of, other common property resources (such as trees or grazing land)?*
  - *How has the perishability of product affected processing and marketing practices?*
  - *How have resource shortages affected post-harvest utilisation of catch?*

### **Stakeholder coping strategies to deal with inappropriate macro-level policies**

Where macro-economic policies are adverse the options for change in the sub-sector are generally few.

- *What strategies have different stakeholder groups developed to cope with adverse macro-economic policies ?*
  - *Have fishworkers moved into other more favourable sectors or moved to more favourable countries?*
  - *Have they placed greater reliance on informal sector activities to avoid the controls of government? How have they done this?*
  - *Have they represented their views in an organised way? How effective has that been?*

### **Stakeholder coping strategies to deal with a lack of development agency support**

A lack of support from development agencies often generates greater dependence on traditional community systems and structures but may in extreme cases result in people moving to new sectors.

- *What strategies have different stakeholder groups developed to cope with poor support from development agencies?*
  - *Have they placed greater reliance on community support mechanisms? How have these functioned?*
  - *Has there been any movement of activities to other sector where support for the poor is more appropriate to their needs? How effective has this been?*
  - *Has there been an increase in migration to urban areas?*
  - *Has there been a concerted effort to bypass government regulations (such as fishing restrictions)?*
  - *How have grassroots organisations been used to compensate for deficiencies in support?*

### **Stakeholder coping strategies to deal with micro-level constraints**

Micro-level constraints can be overcome by a range of changes in both individual and group behaviour.

- *What strategies have different stakeholder groups developed to cope with micro-level constraints ?*
  - *Has there been movement out of fisheries in response to rising poverty?*
  - *To what extent do fishworkers migrate to find alternative employment opportunities?*
  - *Has there been a greater involvement of children in the labour force to overcome poverty?*
  - *What role do informal savings and credit mechanisms play amongst the poor in the sub-sector?*
  - *To what extent have assets been sold to overcome poverty?*
  - *In what ways have traditional gender roles changed to overcome poverty?*
  - *Have the poor adapted existing technologies/practices to suit their specific needs?*
  - *Has there been any migration to avoid community levelling mechanisms?*

### **Stakeholder coping strategies to deal with population pressure and disasters**

Population pressure and crises can either pull communities together or force them apart. In many cases people trade their long-term comfort and security for short-term survival.

- *What strategies have different stakeholder groups developed to cope with increasing population?*
  - *Has there been movement out of fisheries in response to rising population?*
  - *To what extent do fishworkers migrate to find alternative employment opportunities?*
  - *To what extent have traditional systems been used to avoid or resolve resource conflicts?*
  - *Has there been a greater use of levelling mechanisms to redistribute scarce resources ?*
- *What strategies have different stakeholder groups developed to cope with crises and stress?*
  - *Has there been a resurgence of community self-help mechanisms?*
  - *To what extent do fishworkers migrate to avoid conflict/crisis?*
  - *Has there been movement to other sectors to avoid conflict?*

## 5.16 The consequences of continued poverty in small-scale fisheries

If poverty continues to affect different groups in small-scale fisheries it will have an effect on the achievement of national development objectives. It is important to assess how continued poverty will affect these objectives so that priorities for action can be identified.

□ *To what extent will continued poverty in the sub-sector affect:*

- *Nutrition and food security?*
- *Poverty alleviation?*
- *Regional development?*
- *Employment?*
- *Creating opportunities for women?*
- *Sustaining biodiversity?*
- *Providing opportunities for community based environmental monitoring?*
- *Supporting the creation of alternative income generating opportunities?*
- *Contributing to economic growth?*
- *Maintaining a positive foreign exchange balance?*

Reference should be made to section 5.3 above and section 4 of the **Framework Document** for further information.

## 5.17 Defining priority factors to be addressed

From the dialogue established with the fishing community it is possible to identify what are considered to be their main problems (see section 5.15). Section 5.16 enabled us to begin to understand what the consequences of doing nothing about these problems are liable to be for the achievement of national development objectives. On the basis of these two assessments it should be possible to place some relative priority on solving the different problems.

As with the situation with limited private sector development, doing so will not be easy. It may require priorities to be different in different locations. It may also require that priorities change over time so that the needs and aspirations of different groups change in importance as their problems become solved or changed.

These priorities will then form an important part of the policy framework.

- What are the relative priorities of the factors causing poverty which need to be addressed to:*
  - *Maximise the sustainable benefits to the nation?*
  - *Maximise the sustainable benefits to the different stakeholder groups?*
- How can these priorities be harmonised to maximise the benefits overall?*
  - *Is there a need for different local priorities?*
  - *How can the priorities be changed over time?*

## **5.18 Strategy options for poverty alleviation in small-scale fishing communities**

Having identified the priority problems which need to be addressed it is important to look at the range of options which are available to overcome these problems. In the main these will be similar to those available to address the factors limiting private sector development (see section 5.10). In spite of the similarities, it is important to assess these options carefully as the most obvious strategies are not always the best or appropriate to the needs of all groups. It is also important to assess the widest possible range of options because these will all need to be discussed with the stakeholder groups to see which are the most appropriate to combine with their coping strategies and their capacities for change. As different groups will have different perceptions of the relative priority of constraints, different coping strategies, different aims and aspirations, and different capacities for change, it will be important to keep an open mind as to which strategy options are appropriate for each group at any particular time.

### **Strategies for overcoming poverty caused by resource characteristics**

Strategies aimed at the factors resulting from resource characteristics focus principally of controlling the use of the resource, distributing access to the resource between different groups and reducing the risks inherent in using the resource. The management of fisheries is one of the main areas where government development agencies have been involved in mitigating the adverse resource characteristics. This has, however, very often failed or proved costly to implement. Assisting communities to redirect their fishing effort to less threatened resources or to maximise the financial returns on the harvest through improved post-harvest activities, are also important.

- *How can resource planning and management be improved ?*
  - *How can licensing, quotas, species restrictions, technical restrictions, seasonal restrictions, taxes, rents, closed areas or the creation of property rights be used?*
  - *Will this improve the sustainable availability of resources for the poor?*
  - *How can government and traditional management systems operate together?*
- *How can preferential resource access for the poor be achieved?*
- *How can environmental degradation be reduced?*
  - *Is there a need to increase the understanding of existing degradation?*
  - *How can inter-sectoral environmental co-ordination be improved?*
  - *Is there potential for better use of environmental impact assessments?*
  - *Is it possible to rehabilitate degraded environments?*
- *Can the resource base be expanded?*
  - *How can floodplain stocking be used to enhance the natural resource ?*
  - *How will the poor be ensured of access to expanded resources?*
  - *What will be the other environmental impacts of resource enhancement? How will this affect the poor?*
- *How can post-harvest utilisation be improved to increase the supply and nutritional qualities of the fish?*
  - *How can onboard handling and preservation be improved?*
  - *How can onshore perishability be reduced?*
- *How can the risks inherent in the use of fisheries resources be reduced?*
  - *Is it possible to develop alternative income generating opportunities to combat seasonal resource shortages?*
  - *To what extent can community-based insurance schemes be developed to overcome the risks of the sub-sector?*

### **Strategies for overcoming poverty caused by macro-economic policies**

These strategies consist mainly of measures to adjust wider policies so that they take into consideration the specific needs of the poor in the small-scale fisheries sub-sector.

- *How can welfare transfers be used to mitigate the affects of macro-policies?*
  - *How can such transfers be made sustainable without creating greater dependence?*
- *How can taxes be adjusted to assist the poor?*
  - *What is the tax system for fuel, imported engines and spares, nets,? How can this be adjusted to specifically support the poor?*
- *How can the export and production focus of policies be adjusted to sustain resources rather than promote the continued expansion of exploitation?*
- *How can the policy emphasis in the rural environment be adjusted to focus on increasing employment of the poor?*
- *How can producer price controls be changed to increase incomes for the poor?*

### **Strategies for overcoming poverty caused by limited support from development agencies**

Many of the strategies aimed at overcoming the lack of support from development agencies are concerned with institutional strengthening and awareness raising.

- *What are the institutional weaknesses in the fisheries departments and NGOs and how can they be overcome?*
  - *How can awareness and skills be improved in relation to assisting the poor?*
  - *How can the skills and support systems be developed which address the needs of specific groups such as the old, the very young, the ethnically disadvantaged and women?*
- *How can the policy and planning of government, in relation to poverty, be improved?*
  - *How can policy and planning skills and systems be improved?*
  - *How can the targeting of policies towards the poor be improved?*
  - *How can the poor be more effectively involved in decision-making and policy?*
- *What are the fisheries related skills in the NGO sector and how can they be improved?*
- *How can the skills and support systems be developed which address the needs of specific groups?*
- *How can awareness of the needs of poor fishworkers be raised in other sectors?*
  - *Can health, education, transport and commerce departments be assisted to understand and cater for the needs of the poor in small-scale fisheries?*
  - *How can this be achieved?*

### **Strategies for overcoming poverty caused by micro-level constraints**

Many of these strategies consist of building up local capacity to cope with problems, raising awareness and mobilising groups. In many cases the government staff with the skills to understand these problems and to address them will be lacking in the fisheries

departments. In some cases NGOs will be better suited to address these problems but may lack the technical skills.

- How can non-fisheries income generating opportunities be developed for the poor?*
- How can informal credit systems be made more effective?*
  - *How can group savings and credit schemes be enhanced?*
  - *How can the transaction costs of supplying credit be reduced?*
- How can employment be improved?*
  - *Can more labour intensive technologies be employed?*
  - *How can working conditions be improved?*
- How can specific marginalised groups be better supported?*
  - *How can women be specifically supported?*
  - *How can marginalised groups be encouraged to participate more in decision-making?*
- How can grassroots organisations be enhanced?*
  - *Do existing organisations cover the needs of all stakeholder groups?*
  - *How can marginalised groups be better organised?*
- How can NGOs and government work more effectively in support of the poor?*
  - *How can government provide direct support to NGOs to help implement its policies?*
  - *How can NGOs become more involved in the decision-making processes?*
  - *How can research and development work be sub-contracted to NGO's*
  - *How can NGO's, the poor and government provide each other with training in areas where each lacks skills?*

#### **Strategies for overcoming poverty caused by population pressure**

The main strategies involved in population induced poverty concern support in family planning and creating increased opportunities for the poor.

- *How can family planning education be more effectively incorporated into the pattern of fishing communities?*
- *How can the poor be provided with the skills to move out of the fishery and into more productive sectors?*
- *How can inward migrants be controlled from entering the fishery?*
  - *How can local management of the resource by the poor be enhanced?*
  - *What alternative income earning opportunities can be created for the migrants?*
  - *Can more fishing opportunities be transferred from the wealthier sections of the community to the poor through such mechanisms as access controls?*

### **Strategies for overcoming poverty caused crises and stress**

Crises and stress are often periodic occurrences. Strategies often involve improved disaster support from government. In the long-term, however, strategies need to reduce the vulnerability of the poor and build up their capacity to cope more effectively with disaster.

- *How can disaster support be improved to the poor?*
  - *Are disaster relief plans capable of dealing with the needs of the remote, rural poor?*
  - *How can the poor be made more aware of how to access relief?*
- *How can the vulnerability of the poor be reduced?*
  - *What mitigating measures can be taken to reduce the frequency, duration and extent of disasters?*
  - *How can the poor's awareness of disasters be increased? Can early warning systems be improved?*
  - *How can the capacity of the poor to deal with disasters be increased?*

## **5.19 Identifying conflicts between sub-sector strategies and community coping strategies to overcome poverty, and harmonising them**

### **Conflicts between strategies**

Having identified a range of development options to address the problems of poverty in small-scale fisheries communities, it is essential to identify where these support strategies might conflict with the coping strategies of the poor themselves.

This potential conflict can waste large amount of development resources and result in no positive impact. In many cases this type of policy conflict is the most common and results in government support harming the poor rather than helping them.

Identifying these conflicts and resolving them must be done in a participatory way which ensures the involvement of all the different stakeholder groups. It is important to realise that different stakeholders will have different coping strategies to deal with a given constraint. It is thus important to understand how support strategies will affect different groups.

- *How will resource related support strategies conflict with coping strategies?*
  - *How will increasing control over resources conflict with fishermen's desire to expand their fishing activities when resources are scarce?*
  - *How will government controls over fishing activities conflict with community management measures?*
  - *How will creating, sustaining or increasing the use of property rights affect the access of the poor to fishing resources?*
  - *Will providing the poor with preferential access to resources generate conflict with other resource users?*
  - *Will expanding fishing opportunities for the poor increase inward migrants to the fishery?*
- *How will adjustments to macro-policies conflict with community coping strategies?*
  - *Will they generate conflicts between different economic strata?*
  - *Will welfare transfers increase the vulnerability of the poor in the long-term?*
  - *Will trade liberalisation and market-based pricing policies increase the local cost of food?*
  - *How will changes in employment policy affect local job opportunities for the poor?*
- *How will improved support capacity of development agencies conflict with community coping strategies?*
  - *Will improved participation of the poor in policy-making threaten traditional structures?*
  - *How will greater involvement of women in decision-making be accepted by elites?*
- *How will overcoming micro-level constraints conflict with community coping strategies?*
  - *Will such support lead to a breakdown in traditional power structures? How will this affect the poor?*
  - *How will support to overcome community levelling mechanisms affect wealth redistribution?*
  - *Will support for co-operative action break down traditional support systems/ linkages between the rich and poor or vertical linkages between activities?*
- *How will overcoming population-related constraints conflict with community coping strategies?*
- *How will overcoming disaster-related constraints conflict with community coping strategies?*
  - *Will short-term support increase the vulnerability of the poor to disasters in the long-term?*
- *How will these conflicts differ between stakeholder groups?*

### **Harmonising strategies**

In spite of these potential conflicts, there is considerable scope for harmonising support strategies with community coping strategies to reduce or eliminate conflict. This requires

close dialogue between development agents and primary stakeholders to gradually harmonise strategies.

- How can strategies to overcome resource-related constraints be harmonised?*
  - *How can government and the community work together to come up with resource management strategies which both sides support and co-operate on during implementation?*
  - *How can the poor be effectively incorporated into such management programmes?*
  - *How can alternative income earning opportunities for the poor in the fishery be increased simultaneously with additional controls on access to resources?*
  - *How can the poor be actively involved in environmental monitoring systems?*
  - *Can environmental rehabilitation programmes employ the poor?*
  - *How can the poor contribute to a better understanding of inter-sectoral co-ordination in resource management?*
  - *Can the poor be encouraged to reduce harvesting of over-exploited resources in the medium-term to allow resources to be replenished?*
  - *How can post-harvest practices be adapted to specifically suit the needs of the poor?*
  - *Can migration between fishing areas be controlled but made reciprocal?*
- How can strategies to overcome constraints related to macro-level policies be harmonised?*
  - *Can policies be redirected towards poor, rural and informal operators?*
- How can strategies to overcome constraints related to poor development agency support be harmonised?*
  - *How can NGOs and government more effectively support each other?*
  - *How can grassroots organisations be better supported by development agencies?*
- How can strategies to overcome micro-level constraints be harmonised?*
  - *How can support be provided to all strata in the community to reduce conflicts?*
  - *How can the poor be provided with support to allow their children to continue with schooling?*
  - *How can informal community organisations be strengthened?*
  - *How can informal credit and savings schemes be linked to more formal credit systems?*
- How can strategies to overcome constraints related to population pressure and disasters be harmonised?*
  - *How can community self-help systems be strengthened through government support?*
  - *How can communities be more involved in planning disaster relief?*

## 5.20 Environmental degradation and small-scale fisheries

The third key problem area facing the small-scale fisheries sub-sector is that of environmental degradation. This contributes to both poverty and to a weak private sector. It can also be caused by poverty and the actions of the private sector in pursuit of growth.

To understand the features of, and the factors contributing to, environmental degradation it is necessary to define the environment in which the small-scale fisheries operates. This can be seen within the broad context of the nation's environment and how it has been degraded.

### **The overall natural environment and its degradation**

Degradation of the environment in which the small-scale fisheries sub-sector operates must be seen within the context of the wider environment. The aquatic environment will generally play a small part of the overall environment (except in small island states) and likewise degradation of the aquatic environment may be a minor part of the overall environmental problem facing the country. In addition the institutions which are aimed at supporting the environment need to be fully understood as their policies will have a direct impact on the small-scale fisheries sub-sector.

- What are the dominant habitats in the country?*
  - *What are the main features of these habitats?*
  - *How do these features specifically affect the economy?*
  - *How important is the aquatic environment overall?*
- What are the main problems concerning environmental degradation in the country?*
  - *What are the features of this environmental degradation?*
  - *Which habitats does it most affect?*
- What are the main institutions involved in environmental policy?*
  - *What capacity do they have to address these problems?*
  - *What policies have been developed to address environmental problems?*
  - *What priority does degradation of the aquatic environment have in the overall management of the environment?*

### **The physical environment in which small-scale fisheries operate**

Fisheries operate in marine, estuarine and freshwater areas. The diversity of habitats is almost limitless but the main ones are as follows:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Open sea</li> <li>• Inshore coastal areas</li> <li>• Coral reefs</li> <li>• Estuaries</li> <li>• Deltas</li> <li>• Mangrove swamps</li> <li>• Lagoons</li> <li>• Floodplains</li> </ul> | <ul style="list-style-type: none"> <li>• Wetlands</li> <li>• Streams</li> <li>• Rivers</li> <li>• Canals</li> <li>• Reservoirs</li> <li>• Lakes</li> <li>• Ponds</li> </ul> |
|--|---|

Each of these different habitat types have their own distinct features and are all affected by environmental degradation in different ways. These features not only include the physical aspects of those habitats but also the legal, social and economic features.

Small-scale fisheries also use the land. This is thus an important part of the physical environment to be studied. The land is used for housing, for food production, for storing fish and mending gear, for growing trees for smoking fish and building boats, and for transporting fish. Understanding the land environment and how it relates to the fishery is an important part of understanding the problems faced by the sub-sector and how those problems might be overcome.

*What are the dominant marine habitats used by fisheries?*

- *Which of the above habitats are used?*
- *How does their use differ from each other?*
- *What are the main features of these habitats?*
- *How do these features specifically affect the associated fishery?*

*What are the dominant fresh water habitats used by fisheries?*

- *Which of the above habitats are used?*
- *How does their use differ from each other?*
- *What are the features of these habitats?*
- *How do these features specifically affect the associated fishery?*

*What are the main land areas associated with these aquatic habitats?*

- *How do they differ from each other?*
- *How do these differences impact on the associated fisheries?*



## 5.21 The features of environmental degradation associated with small-scale fisheries

### Environmental degradation and small-scale fisheries

Environmental degradation can have a very significant effect on small-scale fisheries by removing opportunities from both the poor and the private sector. It not only reduces the total availability of fish, it also changes the species composition of the catch, its seasonality, its catchability, and the quantity and value of landings. This in turn can have variable effects on different groups of fishworkers. A change in the dominant species towards larger, more mobile or more offshore fish may, for example, remove opportunities for the small-scale inshore operators with low levels of technology.

Likewise destruction of the land environment may result in the decline of agriculture and living standards affecting the health of fishworkers and the surplus capital for investment in the sub-sector. Forest depletion may also affect the ability to build boats or to smoke fish. Deforestation may lead to increased flooding which may damage vital transport links to markets.

- *How has degradation of the aquatic environment reduced opportunities for the small-scale fisheries?*
  - *To what extent has it reduced the overall availability of the fish?*
  - *To what extent has the species composition changed? How has this affected different groups in the fishery?*
  - *To what extent has the size structure of the catch changed? How has this affected different groups in the fishery?*
  - *To what extent have changes in the aquatic environment affected the incidence of disease in the local community?*
- *How has degradation of the land environment changed opportunities for the small-scale fisheries?*
  - *How has this affected other productive activities, such as agriculture, which the fishworkers also depend on?*
  - *How has it affected the quality of life of the community? How has drinking water been affected?*
  - *How has it affected the availability of fuelwood and vessels construction materials?*
  - *How has it affected transport links?*

Degradation of the environment in which small-scale fisheries operate occurs in a range of ways. It is possible to broadly categorise these under five headings. In reality there is

considerable overlap between these categories but they provide a useful framework for analysis.

The five categories used here are:

- Depletion of resources
- Loss of biodiversity
- Destruction of habitats
- Pollution
- Loss of Amenity

These are outlined below.

### **Depletion of resources**

Whilst there remains potential for expanding catches, most of the major resources are believed to be being harvested at the maximum level which can be sustained in the long-term. This applies to both marine and freshwater resources. In the future the main expansion of fish supply will come from four sources:

- Exploiting currently under-utilised resources
- Better management of currently utilised resource
- Enhancing natural resources
- Aquaculture

In addition the catch from the small-scale fisheries can also be increased by transferring fishing opportunities away from the industrial (foreign and local) towards to small-scale fishery. Furthermore the value of fish can be maintained or increased through improved handling, preparation, processing and improved access to markets.

These increases will only be achievable if resource depletion is controlled.

Resource depletion is also a feature of the land-based resources accessible to the small-scale fishery including the forest resources needed by the sub-sector.

*To what extent are the resources depleted in the local fishery?*

- *How does this appear in terms of reduced overall fish catches, reduced catch rates, reduced average size, seasonal changes in availability, and changes in species composition?*

*To what extent are the land resources depleted locally?*

- *How does this appear in terms of local deforestation?*

### **Loss of biodiversity**

Reduced biodiversity can take three forms:

- Reduced number of species
- Loss of genetic diversity
- Ecosystem degradation

Changes in the species composition can come about through changes in the environment or through selective fishing. Slow growing species or those with low reproduction rates such as turtles, dugongs and sharks, are particularly susceptible to over-fishing and can thus be quickly depleted. Changes in the relative numbers of predators and prey in a particular fishery can also lead to sudden changes in species composition. The introduction of new species into an enclosed aquatic environment may also significantly change the species composition.

Genetic diversity changes are often more difficult to assess as the genetic composition of the stock may be poorly understood. They can manifest themselves in the changes in the variation in genetic make-up of stocks of fish, or in the number of different sub-species or varieties.

Ecosystem diversity refers to the complexity and number of different ecosystems in a particular area. A coastal area, for example, may support seagrass beds, mud flats, coral reef, mangrove, sandy beaches, dune areas, coastal forests, cliffs or rocky shores, each with their own diverse range of flora and fauna. Changes in the environment can rapidly change this diversity.

*To what extent has species diversity changed?*

- *Has there been a major change in the composition of species landed?*
- *Has there been localised changes in species composition?*
- *Have new species been introduced to the ecosystem? What effect has this had on indigenous species?*
- *Has there been a change in the species of tree resources available to the community?*

*To what extent has genetic diversity changed?*

- *Has there been a change in the variety of different species of fish? How has this shown itself?*
- *Has selective cropping of trees led to a change in the varieties available?*

*To what extent has habitat diversity changed?*

- *Has the number of habitat types? Has this occurred in the freshwater or marine environments?*
- *Has the diversity within habitat types changed?*

## **Destruction of habitats**

Following on from the diversity of habitats, whilst the number of habitat types may not have changed, they may have declined in quality. Such quality loss will include changes in a range of the features of the habitats. Some may be clearly visible, others may be more subtle affecting the fish stocks without changing the apparent physical structure of the habitat.

Coastal erosion is one type of habitat destruction which is a continuing problem in many countries. This has resulted in the loss of building land, roads, property and crops.

Some rivers now run much less frequently due to the inappropriate use of the water in them. Siltation has blocked up river courses or changed their direction. Increased silt loads in some rivers has led to silt cover in many inshore habitats which reduces productivity and food resources for fish. Fish breeding grounds in inshore areas may also be affected by silt cover thus reducing recruitment to the adult stock. Suspension in the water column may also reduce light penetration and thus affect the primary productivity of the lakes and rivers.

Habitat destruction may also result in changes in flood patterns. This may result in water not being available in the floodplains at the appropriate time for spawning or for migration. The increased incidence from flash flooding due to habitat destruction can also adversely affect spawning. This is particularly so where, on river banks, the tree cover has been completely removed and substantial erosion is occurring.

The coastal mangrove habitat is also under threat as fuelwood reserves are depleted in coastal areas. The increased scarcity of fuelwood at inland sites and the rising cost of transportation, makes coastal mangrove resources desirable fuelwood resources.

□ *To what extent have the different habitats been degraded over time?*

- *Which habitats have been most affected?*
- *What form does the degradation take?*
- *How can this degradation be measured?*

## **Pollution**

Pollution can take the form of chemicals, sewage, and other wastes. Many of the effects of pollution are sub-lethal and difficult to detect directly but they may have a very marked effect on fish fecundity and thus on recruitment to the adult stocks. They may also affect the viability of different plant species and thus select against specific herbivores which depend on those species.

- How does pollution in the aquatic environment manifest itself?
  - Which habitats have been affected/degraded and in what ways?
  - Are there signs of lethal or sub-lethal effects on aquatic species?

### **Loss of Amenity**

Loss of biodiversity, habitat destruction and pollution can all lead to loss of amenity both for the local people, who use the waters of lakes and rivers for washing and consumption, and also the lakes and coasts used for tourism.

In many lakeshore sites where sediment loads have increased, clean drinking and washing water is threatened. Water borne diseases, such as river blindness, gastrointestinal illnesses, cholera, infectious hepatitis, paralytic shellfish poisoning and ciguatera are also on the increase and are a major problem for many resource-adjacent communities. Such diseases not only reduce the quality of life but also affect the local economy by reducing labour productivity and discouraging tourism.

The diverse habitats, bird life and fish species of the coast and lakes are a major tourist resource which could bring considerable foreign currency to many parts of the world. The loss of this diversity poses a threat to these income sources.

- In what way has the amenity of the aquatic environment been adversely affected?
- Which social and economic groups have been affected by this loss and in which way?

## **5.22 The factors causing environmental degradation**

There are a wide range of factors which contribute to environmental degradation. Ultimately they emanate from policy and market failures. It is not always easy to see the connection between these failures and the forms of environmental degradation seen on the ground. From the point of view of strategy identification, it may be more helpful to identify those specific factors which are directly linked to particular features of environmental degradation. The main factors contributing to environmental degradation as related to small-scale fisheries are as follows:

- Activities of the small-scale fisheries itself
- Activities of industrial fisheries
- Aquaculture
- Other human interactions
- Natural causes

These are outlined below.

### **Activities of the small-scale fisheries itself**

One of the major causes of environmental degradation in the small-scale fisheries sub-sector is the activity of the sub-sector itself in terms of the level of exploitation, the gear used and the fish processing techniques used. The production focus of small-scale fisheries in much of the world has been on the introduction of more efficient boats and gear. This development drive has been very successful in that, combined with market and transport expansion, it has resulted in many fisheries now producing to their maximum. In some cases the fisheries have become over-exploited.

The expansion of fishing effort has partly arisen from natural population increase in coastal villages and partly because fisheries has been seen as a lucrative sector in which to invest money or seek employment relative to other sectors. Decreasing returns to farming as a result of low producer prices has, in the past, further encouraged people in resource-adjacent communities to join the fishery either domestically or as migrants to other countries. The retrenchment of public servants may also have resulted in increased outside investment in fisheries.

As many fisheries have become increasingly open in their access, there are effectively few controls on the expansion of the number of people in the fishery or the efficiency of fishing units. This has also resulted in the increased use of destructive fishing gear such as under-sized meshes, poisons and explosives. Not only have target species become over-exploited but also non-target species such as non-marketable fish, sea birds and mammals. When gear is lost at sea it often continues to fish with no benefit to the fishermen. This "ghost fishing" is now thought to be a considerable problem.

The lucrative aquarium fish trade has also prompted an expansion of reef harvesting resulting in considerable damage. Outboard engines can also damage the environment by pumping exhaust gases into the atmosphere or the surrounding water, and boat anchors can damage reefs.

Much of the fish caught is processed by either smoking, sun drying, or frying. All of these methods require fuelwood and, in the case of fish smoking, it is likely that selected timbers are used. The selective targeting of specific trees for either boat construction or fish smoking is also having a marked effect in some areas. Excessive tree harvesting can lead to increased soil erosion, siltation of rivers, lagoons, lakeshore areas and increased flash flooding. Salt pan construction has also led to the clearing of mangroves.

Small-scale fish workers generally live in communities located adjacent to the resource. Such communities can degrade both the aquatic and land environments. In particular fuelwood use, agriculture, mineral mining for building houses and roads, and the release of sewage all threaten the aquatic environment.

- In what ways do the activities of small-scale fisheries degrade the environment?*
  - *How does over-fishing affect the environment? How does it affect total landing, catch rates, average size of fish caught?*
  - *To what extent are non-target species affected (fish, birds, mammals)?*
  - *What reasons are given for the resource over-exploitation?*
  - *To what extent is ghost fishing thought to be a problem?*
  - *What damage has been done to coral as a result of aquarium fish capture?*
  - *Has the number or efficiency of fishing units in the fishery increased in recent years? Why has this happened?*
  - *Are illegal fishing gears used such as poisons, explosives, small meshes?*
  - *Does excessive use of outboard motors in enclosed areas result in water pollution?*
  - *What damage do anchors do to the coral reefs?*
  - *Does the construction of boats affect certain tree species?*
- How has small-scale fish processing affected the environment?*
  - *Has it led to deforestation? Has this focused on certain species of trees?*
  - *Has salt production affected mangrove areas?*
- In what ways do resource adjacent communities degrade the environment?*
- To what extent are those changes due to changes in population pressure?*

### **Activities of industrial fisheries**

Interaction between the large- and small-scale fisheries often occurs in coastal waters and the larger lakes. These vessels pose a threat to the environment used by the canoe fleet in several ways. They often compete directly for the same resource and add to the over-exploited nature of the resource. They may use excessively destructive fishing gear which reduces both recruitment and growth of the stocks. They may also contribute to the over-exploitation of non-target species (fish, mammals and birds) and contribute to “ghost fishing”. The dragging of anchors and mobile fishing gear can also adversely affect aquatic habitats (see also section 5.6 for points on inter-gear conflicts).

The operation of industrial fleets also has an environmental effect through motorisation and through its extensive use of freezer and coldstore facilities which generate CFCs. Likewise the industrial processing of fish can pose localised environmental threats.

- *In what ways do large-scale fishing practices adversely affect the aquatic environment of the small-scale fishing sector?*
  - *What impact does the large-scale fisheries sector have on over-exploitation of the resource?*
  - *What is the impact non-target species?*
  - *To what extent do they contribute to ghost fishing?*
  - *What is the impact on marine habitats (corals, seabed, etc.)?*
- *What are the by-products from large-scale fish processing activities (ice production, canning, filleting, fishmeal etc.) and what impact do these have on the aquatic environment?*

### **Aquaculture**

Aquaculture exists in both traditional and introduced forms in small-scale ponds and in larger reservoirs where culture-based fisheries have developed to enhance wild stocks.

Pollution, reduced water flow of local rivers, disease, and genetic weakening of wild stock from farmed species are all ways in which aquaculture can affect the environment. The introduction of exotic species can also threaten local biodiversity. Aquaculture has also resulted in the degradation of forest (especially mangrove) resources and increased salinities in farm adjacent lands.

- *To what extent has there been an expansion in aquaculture production and how does it affect the environment?*
  - *What are the by-products (food waste, faecal waste, chemicals, etc.) from aquaculture and how has water quality been affected?*
  - *How have land-use patterns and drainage systems been affected?*
  - *In what way have wild stocks been affected by aquaculture? How have the introduction of exotic species contributed to this?*
  - *How have forest resources been affected?*

### Other human interactions

Other human activities create adverse impacts on the environment used by the small-scale sector, as externalities to their own activities. These often occur at great distance from the fishing grounds and may be initiated across borders.

Other human activities fall into eight main headings:

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• Forestry</li><li>• Agriculture</li><li>• Industrial and engineering</li><li>• Infrastructural</li></ul> | <ul style="list-style-type: none"><li>• Shipping</li><li>• Tourism</li><li>• Urbanisation</li><li>• Mineral extraction</li></ul> |
|---|--|

Deforestation for fuelwood, charcoal production, bush fires, agriculture, construction, export, fish smoking etc., has been extensive in many parts of the world. This has increased soil erosion and the silt loads in water courses and is implicated in major changes in the water resources. Increased sedimentation can lower light penetration and thus reduce aquatic primary productivity. Many streams are now only seasonal and water levels in many lakes are falling. Flooding has also been affected by deforestation and this in turn affects wetland formation, fish breeding and coastal habitats (such as coral reefs). There is also concern that mangrove harvesting for fuelwood, construction and in the process of agricultural land clearance, may be resulting in degraded coastal habitats.

Agriculture has led to soil erosion (through grazing, farming on unprotected slopes, and bush burning); and pollution through the use of pesticides and fertilisers. The use of irrigation in rice cultivation and on the larger cocoa farms is important in some areas. Water is often diverted from rivers where reduced water flows may adversely affect down-stream fisheries. In some areas important wetlands have been drained or mangrove areas cleared for agricultural expansion.

Industrial development is relatively well advanced in coastal and lakeshore areas in many parts of the world resulting in considerable aquatic pollution and habitat destruction. In some places engineering works to control flooding may adversely affect floodplain fisheries and destroy important wetland sites.

Much of the domestic energy production in the rural environment is from fuelwood burning and the impact of this has been discussed above. Hydro-electric dams act as a barrier to the upstream migrations of fish and change in flow rates of water which may interfere with downstream floodplain characteristics which in turn may affect both fish productivity and fish harvests. Patterns of silt deposition around river mouths are also affected resulting in increased coastal erosion and changes in water nutrient levels. The salinity of estuarine areas has also changed with the salt/fresh interface moving further

upstream, and aquatic plant growth in some areas is causing transport problems. The incidence of water-borne disease may also be affected. Transport systems require ports, harbours, roads and bridges all of which can have similar effects on the flow of water and sediment movement. Ships have also introduced exotic species through water ballast.

Tourism is a growing industry and one which is having a localised effect on the coast. The construction of hotels can increase coastal erosion and increased sewage discharge. These effects are compounded in urban areas where pollution and changes water drainage are particularly damaging and in some places important wetlands have been drained to eradicate malaria, produce salt, promote aquaculture or expand urban areas.

Mining can dramatically increase sediment loads in the rivers and lakes which then affect the fish populations and changes sediment deposits. It is also responsible for considerable deforestation and the resulting adverse effects noted above. The processing of minerals can produce heavy metals such as copper, zinc, lead, iron, manganese and mercury which produce complex chemicals, dissolved salts and suspended solids affecting fish productivity. The leaching of these substances into underground water supplies may also affect the quality of drinking water supplies for nearby communities. There has been some coastal erosion due to the collection of sand and gravel from coastal areas. Oil extraction has also been very damaging in some aquatic environments.

Human behaviour has also contributed to climatic change and ozone layer depletion. Such change will exacerbate problems in the coastal zone through inundation of low lying areas, storm damage and through increased coastal habitat destruction. Changes in the atmosphere can also have effects on the penetration of UV light. This can under certain circumstances result in the death of phytoplankton and thus impact on coastal and lake productivity.

All of these problems have increased as population has increased in the coastal zone.

- ❑ *To what extent is deforestation a threat to the aquatic environment?*
  - *How has this affected river sediment loads, flooding, water quality and what adverse effects has this had on resources and habitats?*
  - *How are these resources used (fuel, building, smoking, furniture, etc.) and how does this affect the fishing communities?*
- ❑ *To what extent is agriculture a threat to the aquatic environment?*
  - *How has agriculture affected sediment loads in rivers and what impact has this had on aquatic resources and fisheries?*
  - *How has agricultural reclamation affected wetlands?*
  - *In what ways have by-products from agriculture affected water quality in surrounding areas and to what extent have fishery resources been affected?*
  - *To what extent is irrigation affecting the aquatic environment both locally and further afield. In what ways has agriculture affected coastal, wetland, lakeshore and floodplain habitats?*
- ❑ *To what extent is industrial development a threat to the aquatic environment?*
  - *To what extent have industrial effluent affected the water quality in surrounding areas and in what ways have fishery resources been affected?*
  - *Has there been habitat destruction for the construction of industrial plants?*
- ❑ *To what extent is infrastructural development a threat to the aquatic environment?*
  - *What is the infrastructural development which most affects the aquatic environment? How does it do this?*
  - *In what ways have these changes affected the aquatic environment (creation of lakes, reduced water flows, obstructions, etc.)?*
  - *In what ways have these changes affected the living resources (migrations, nursery areas, habitat destruction etc.)?*
- ❑ *To what extent is transport a threat to the aquatic environment?*
  - *In what way has water quality been affected by discharges from vessels and how have fishery resources been affected?*
  - *Do roads and bridges affect the aquatic environment?*
  - *Do port facilities have adequate handling facilities for vessel contaminants and who is responsible for this?*
- ❑ *To what extent is tourism a threat to the aquatic environment?*
  - *Has tourism affected the quality of water through increased sewage? How has this affected the communities? How has it affected primary productivity and the fish resources ?*
- ❑ *To what extent is urbanisation a threat to the aquatic environment?*
  - *To what extent has water quality been affected by urban effluent and how have fishery resources been affected?*
  - *To what extent have aquatic habitats been affected by urban expansion and how have fishery resources been affected? How have fishing communities been affected?*
- ❑ *To what extent is mineral extraction a threat to the aquatic environment?*
  - *To what extent has water quality been affected by mineral extraction (sediment loads, heavy metals, oxygen levels, light penetration etc.) and how have fishery resources been affected?*
  - *To what extent have aquatic habitats been affected and what has been the impact on fishery resources?*
- ❑ *To what extent is climate change and depletion of the ozone layer affecting fishing communities?*
  - *Which areas are most at risk from increased flooding, coastal erosion and habitat destruction?*
- ❑ *To what are all these factors being increased due to general population pressure?*

### **Natural causes**

Drought can be a major threat to the aquatic environment affecting lake water levels, river flows, flooding patterns, and the incidence of bush fires. Flooding can also be very destructive leading to habitat degrading, fish kills, and changes in sediment loads.

Wave and current action in the coastal zone has led to some coastal erosion and the loss of lagoon waters to the sea.

The carrying capacity of the sea and lakes can also change through natural causes this can particularly affect the local availability of pelagic species, especially where they are dependent on coastal upwellings.

The introduction of exotic species has occurred on several occasions in the past. Most introductions of fish were for the purposes of fish farming or to enhance local wild stocks. Others introductions include water plants, such as the water hyacinth, some of which have locally increased in levels sufficiently to restrict local economic activities or change aquatic environments.

□ *How have natural causes affected the fishery?*

- *How has drought affected the aquatic environment and the resource availability?*
- *How has flooding affected the aquatic environment and the fish resources?*
- *How has wave action affected coastal areas and lake-shores?*
- *Are there any noticeable effects of atmospheric changes in water levels, or local productivity?*
- *How have exotic plants and animals affected the local resources and fishery?*

## 5.23 Defining the needs, aims and strategies of participants in relation to environmental degradation

### Aims and aspirations

From the above it is possible to identify a range of factors contributing to environmental degradation. It is essential, however, that the stakeholders are actively involved in identifying which of these factors are most important from their perspectives and how they cope with them.

- What are the most important features of environmental degradation which affect the fisherfolk?*
  - *What are their long-term aims of each stakeholder group in relation to the environment? What features environmental degradation do they wish to address first?*
  - *What are the key problems faced by the different groups (technical, ethnic, gender as well as business size/type)? How do these priorities differ between groups and why?*
  - *How do these problems, and their relative priority, change over time?*
  - *Are the groups able to cope with these different problems and if not what support do they feel they need from outside?*
- What are the capacities of the different groups to deal with problems?*
  - *How do skill levels and organisation vary between groups?*

### Stakeholder coping strategies to deal with the adverse effects of different factors on the environment

Different groups learn to cope with the environmental problems they face in different ways. It is important to understand these coping strategies as they will affect the type of strategy which the development agency can adopt to assist the particular group.

Coping strategies may be developed to address each of the factors contributing to environmental degradation. Given, however, that many of the factors operate at considerable distance from their point of impact, the fishing community is often powerless to respond. As a result there are several key responses which appear to apply to most of the factors.

One of the most usual consequences of environmental degradation is a decline in the resource base. The response of fishermen is often to increase their fishing effort to compensate for their falling catch rates. Where this response does not overcome the problem in the long-term, the community may resort to community controls over fishing effort.

Where environmental damage becomes extreme and livelihoods are threatened, direct confrontation between fishworkers and those generating the problems is common. This

is often an unsuccessful strategy because those causing the environmental problem are often more powerful than fishworkers and fishworkers often lack the resources to sustain conflict over a long period. In such cases the participants in the small-scale fisheries may migrate to new areas where the environmental damage is less, or they may move out of small-scale fisheries altogether.

□ *How have the local community responded to environmental degradation?*

- *Have fishing efforts been increased to compensate for this? What has been the consequences of this?*
- *What role have community resource management measures played in this process?*
- *Has conflict developed between those responsible for causing the environmental degradation and the fishworkers?*
- *Have certain groups used migration as a strategy to avoid environmental degradation? What have been the consequences?*
- *Has there been considerable movement out of the small-scale fisheries in response to environmental degradation?*
- *How have different stakeholder groups differed in their response to these problems?*

## 5.24 The consequences of continued environmental degradation in small-scale fisheries

If environmental degradation continues to affect different groups in small-scale fisheries it will have an affect on the achievement of national development objectives. It is important to assess how this will affect these objectives so that priorities for action can be identified.

- *To what extent will environmental degradation in the sub-sector affect:*
  - *Nutrition and food security?*
  - *Poverty alleviation?*
  - *Regional development?*
  - *Employment?*
  - *Creating opportunities for women?*
  - *Sustaining biodiversity?*
  - *Providing opportunities for community based environmental monitoring?*
  - *Supporting the creation of alternative income generating opportunities?*
  - *Contributing to economic growth?*
  - *Maintaining a positive foreign exchange balance?*

Reference should also be made to section 5.3 above and to section 4 of the **Framework Document** for further information.

## 5.25 Establishing priority problem areas to be addressed

From the dialogue established with the fishing community it is possible to identify what are considered to be their main problems (see section 5.23). Section 5.24 enabled us to begin to understand what the consequences of doing nothing about these problems is liable to be for the achievement of national development objectives. On the basis of these two assessments it should be possible to place some relative priority on solving the different problems.

The relative priority of these different factors will differ between areas and environmental priorities are likely to be even more location-specific than the factors limiting private development or contributing to poverty. It may also be necessary for these priorities to change over time so that the needs and aspirations of different groups change in importance as their problems become solved.

These priorities will then form an important part of the policy framework.

- What are the relative priorities of the factors contributing to environmental degradation which need to be addressed to:*
  - *Maximise the sustainable benefits to the nation?*
  - *Maximise the sustainable benefits to the different stakeholder groups?*
- How can these priorities be harmonised to maximise the benefits overall?*
  - *Is there a need for different local priorities?*
  - *How can the priorities be changed over time?*

## **5.26 Strategy options for reducing environmental degradation in small-scale fisheries**

Having identified the priority problems which need to be addressed it is important to look at the range of options which are available to overcome these problems. These are outlined below and are related to the factors contributing to the environmental degradation.

It is important to assess these options carefully as the most obvious strategies are not always the best. It is also important to assess the widest possible range of options because these will all need to be discussed with the stakeholder groups to see which are the most appropriate to combine with their coping strategies and their capacities for change. As different groups will have different perceptions of the relative priority of constraints, different coping strategies, different aims and aspirations, and different capacities for change, it will be important to keep an open mind as to which strategy options are appropriate for each group at any particular time.

### **Strategies for overcoming environmental degradation caused by small-scale fisheries**

There are a wide range of strategies available to development agents to overcome the adverse consequences of the small-scale fisheries sub-sector itself. These form the main strategies used by fisheries departments in the management of the resource. There are also some less common strategies which may be considered.

Few people degrade the environment unless they have to. Many fishworkers resort to environmentally damaging practices because they are forced to by an adverse policy environment which encourages over-exploitation. Improving policy and planning skills and practices can contribute significantly to removing this constraint. Participants should also be encouraged to become involved in contributing to the policy formulation processes, and the development of resource management plans.

Often the aquatic environment is degraded out of ignorance. The fishworkers do not realise the consequences of their actions and the government may not have identified the problem. Improving the awareness of fishworkers of their actions on the environment can be an important strategy.

Improving the management of the resources can be achieved through a range of technical measures, quotas, effort controls, taxes, restrictions etc. These will be most effective if they are designed and implemented jointly by the government and the community through co-management systems and/or by creating, sustaining and enhancing property rights of the small-scale fisheries. In addition specific economic measures can be taken to control environmentally degrading practices.

This may be achieved through resource enhancement or through rehabilitating degraded environments. It may also be possible to expand market opportunities so that more benefits can be gained from existing catches. In some cases aquaculture may be encouraged to complement capture fisheries.

Improved technologies (e.g. more selective fishing gear, less polluting engines and more fuel-efficient fish smoking) may also reduce environmental degradation. It may also be possible to expand the resource base to avoid over-exploitation or to assist communities to adopt practices which allow increased exploitation of more abundant species.

Perhaps one of the most effective long-term strategies will be to increase the availability of alternative income generating opportunities outside of the small-scale fisheries sub-sector so that people are encouraged to leave fishing and reduce pressure on the environment.

- How can environmental policy and planning be improved with the sub-sector?*
  - *How can this be improved in support of the small-scale fisheries?*
- How can information about the adverse environmental impact of small-scale fisheries be better understood?*
  - *How well is it understood in the community?*
  - *How well is it understood in the government?*
  - *How can more cost-effective resource assessment techniques be introduced?*
  - *How can communities be encouraged to assist in information collection and analysis about the environment?*
- How can resource planning and management be improved ?*
  - *How can licensing, quotas, species restrictions, technical restrictions, seasonal restrictions, taxes, rents, closed areas or the creation of property rights be used more effectively?*
  - *Will this improve the availability of resources for the small-scale private sector and the poor?*
  - *How can government and traditional management systems operate together?*
- How can preferential resource access for small-scale fisheries be achieved?*
  - *How can the small-scale operators be separated, and protected from, the large-scale operators (both domestic and foreign)?*
- How can economic measures be adopted to protect the environment from small-scale fisheries?*
  - *How will such measures be implemented and enforced?*
  - *How cost-effective will such measures be?*
- How can the resource base be expanded?*
  - *Can unused species be identified? can new stocks be found?*
  - *Can resources be transferred from the large-scale to the small-scale fleet?*
  - *Is it possible to enhance the natural resource through stocking?*
  - *Is it possible to increase production by combining aquaculture and capture fisheries?*
  - *Can production be sustainably increased through habitat rehabilitation?*
- Can new markets be found for existing products?*
- Can new products be developed for existing resources?*
- Can more environmentally sustainable technologies be developed or used ?*
  - *Which ones can improve fish catching?*
  - *Can more abundant species be targeted?*
  - *Which ones can improve fish processing?*
- Can alternative (non-fisheries) income generating opportunities be created?*
  - *How will this affect different groups of stakeholders?*

### **Strategies for overcoming environmental degradation caused by large-scale fisheries**

The policy failures which result in adverse environmental impacts from large-scale fisheries activities can be addressed through improved skills and policy systems. This will require institutional support at the government level. This can go a long way to creating a positive environment for improved resource management, especially if the participants in the sector are actively involved in the design and implementation of the measures. Such measures might involve the separation of large-scale and small-scale fisheries so that they do not impose environmental degradation of each other. Resource tenure systems may play an important role in this. The technologies used by large-scale fisheries can also be improved so as to be less environmentally damaging.

- How can improvements in the policy and planning capacity of government reduce conflict between large-scale and small-scale fisheries?*
- How can improved resource management reduce conflict between large-scale and small-scale fisheries?*
- How can resource tenure systems reduce conflict between large-scale and small-scale fisheries?*
  - *Are there currently areas which are reserved for small-scale fisheries? How effective are they? How can they be improved?*
- How can increased use of environmentally sustainable technologies reduce the adverse environmental effects of large-scale?*
  - *How can they be used in fish capture?*
  - *How can they be used in fish processing?*

### **Strategies for overcoming environmental degradation caused by aquaculture**

The main strategies which can be adopted relate to those associated with changes in policy and planning. Where policies related to the aquaculture sector conflict with those of the small-scale fisheries it is important to take a more integrated approach to policies. Likewise, the planning of aquaculture should have built-in systems which allow the environmental impact of aquaculture to be effectively assessed.

There is also growing interest in further integrating aquaculture with farming systems thus improving the efficiency and effectiveness of both systems. This can also raise the opportunity cost of capital and labour in resource-adjacent communities and assist in reducing pressure on over-exploited resources.

- *How can policies between aquaculture and small-scale fisheries be improved?*
  - *Is there a need for changes in policy?*
  - *Does the government have the skills to bring that policy change about?*
  - *Is there a need for institutional strengthening in government ?*
- *What environmental impact assessment systems exist in the planning of aquaculture?*
  - *Do these systems adequately reflect the needs of the small-scale fisheries?*
  - *How can they be improved?*
  - *How can aquaculture be more effectively integrated with farming systems in resource adjacent communities?*

### **Strategies for overcoming environmental degradation caused by other human interventions**

The main strategies for removing the adverse external effects of other sectors concern improving mechanisms for inter-sectoral co-ordination. This also requires improved policy research and analysis capacity in government, combined with much more effective environmental impact assessments. The effectiveness of such measures can be improved through a better understanding of the way the environment operates and how the different sectors impact on the aquatic environment.

- *What mechanisms exist for inter-sectoral co-ordination?*
  - *Do ministries meet regularly to discuss inter-sectoral interactions?*
  - *Is there a ministry with the responsibility for inter-sectoral co-ordination? How effective is this? Can it be improved?*
  - *How can economic and fiscal measures be introduced which reduce the environmentally degrading actions of other sectors?*
  - *How can a precautionary approach to development be more effectively used?*
- *What environmental impact assessment systems exist for inter-sectoral interactions?*
  - *Do these adequately cater for the needs of small-scale fisheries?*
  - *Do they take into consideration distant as well as localised effects?*
- *Are the environmental impacts of other sectors well known?*
  - *Is there a need for improved knowledge?*
  - *How can the private sector and the communities be more actively involved in the collecting and understanding environmental information?*
  - *How can this knowledge be gained and disseminated to reduce adverse environmental consequences of development in other sectors?*
- *What specific measures can be adopted to reduce the environmental impacts of other sectors?*
  - *What financial and fiscal measures can be adopted to reduce the environmentally degrading activities of other sectors?*
  - *How can coastal, wetland, river basin and lakeshore integrated management systems be introduced and operated effectively?*

### **Strategies for overcoming environmental degradation caused by natural causes**

The adverse environmental consequences of natural causes can be reduced through early warning systems which alert resource users in advance. This in turn requires improved knowledge of the environment.

- *What early warnings exist for potential natural causes?*
  - *How well are these adapted for the small-scale fisheries sub-sector?*
  - *How effective is the system for getting information to resource users quickly?*
- *How good is the knowledge of the environment and the possible impact of natural causes on the small-scale fisheries?*

## 5.27 Identifying conflicts between sub-sector strategies and participant coping strategies to deal with environmental degradation, and harmonising them

### Conflicts

Having identified a range of development options to address the problems of environmental degradation in small-scale fisheries communities, it is essential to identify where these support strategies might conflict with the coping strategies of the poor themselves.

Identifying these conflicts and resolving them must be done in a participatory way which ensures the involvement of all the different stakeholder groups. It is important to realise that different stakeholders will have different coping strategies to deal with a given constraint. It is thus important to understand how support strategies will affect different groups and different levels of enterprise development.

- How will strategies aimed at changing small-scale fisheries conflict with the community's coping strategies?*
  - *How will increasing the control over the resource conflict with the strategy of fisherfolk to expand fishing effort when faced with falling catch rates?*
  - *How will creating, enhancing or sustaining property rights affect resource-related migrations of fisherfolk?*
  - *Will expanding the resource base attract new entrants into the fishery and thus further increase conflict?*
  - *How will better incomes from improved post-harvest utilisation be used to increase productive capacity in over-exploited fisheries?*
  - *Will creating alternative income earning opportunities in resource adjacent communities attract people into fishing communities and further increase pressure on the resource?*
- How will strategies aimed at changing aquaculture conflict with coping strategies?*
  - *Will changes in aquaculture policy discourage entry into that sector and place more pressure on fisheries?*
- How will strategies aimed at other sectors conflict with coping strategies?*
  - *If development opportunities in other sectors are reduced how will this affect the movement of fishworkers between sectors? Will it increase migration into the small-scale fishery?*
- How will strategies aimed at mitigating the effects of natural resources conflict with coping strategies?*
- How will these conflicts differ between stakeholder groups?*

**Harmonisation of strategies**

In spite of these potential conflicts, there is considerable scope for harmonising support strategies with community coping strategies to reduce or eliminate conflict. This requires close dialogue between development agents and primary stakeholders to gradually harmonise strategies.

- *How can strategies to overcome the adverse effects of small-scale fisheries be harmonised?*
  - *How can the participants in small-scale fisheries be encouraged and supported to play a more active role in defining policy for the sub-sector?*
  - *How can fishing communities be encouraged to contribute to the wider knowledge of the aquatic environment? How can indigenous knowledge systems be used more effectively by scientists and managers? Can community-based environment monitoring systems be developed?*
  - *How can fishermen and women be encouraged to assist in the design and implement resource management programmes?*
  - *How can resource tenure systems be developed which allow reciprocal rights (such as migration rights) between communities?*
  - *How can the creation of alternative income generating opportunities be linked into community controlled limited entry schemes?*
  - *How can small-scale fisheries be supported in the uptake of sustainable technologies?*
- *How can strategies to overcome the effects of large-scale fisheries be harmonised?*
  - *How can those involved in large-scale and small-scale fisheries be encouraged to jointly participate in the design and implementation of sustainable management systems?*
  - *How can the large-scale fishery be supported in the uptake of sustainable technologies?*
- *How can strategies to overcome the effects of aquaculture be harmonised?*
  - *How can aquaculture be more fully integrated with agriculture and small-scale capture fisheries at the community level? How can fishermen and women in over-exploited fisheries be supported to enter aquaculture?*
  - *How can those involved in capture fisheries be encouraged and supported to participate in the formulation of aquaculture policy?*
  - *How can aquaculture be used to enhance wild stocks of fish?*
- *How can strategies to overcome the effects of other sectors be harmonised?*
  - *How can planning at the community-level be made more integrated?*
  - *How can the community become more actively involved in monitoring the adverse impacts of other sectors?*
- *How can strategies to overcome the effects of natural causes be harmonised?*
  - *How will those strategies affect different groups?*

## **5.28 Identifying and resolving conflicts between these three sets of sub-sectoral strategies**

In the above discussion and analysis, three sets of strategies have been developed to address limited private sector development, poverty and environmental degradation. Within each of those sets of strategies there were conflicts between development options and community coping strategies. Even after these options and coping strategies have been harmonised within a particular problem area, there is potential for further conflicts between these sets of harmonised strategies. This arises because of the close interdependence of the private sector, the poor and the environment. Virtually any strategy which aims to alleviate poverty or stimulate the private sector can encourage increased resource use. As many of the aquatic resources in the world are fully exploited, increases in exploitation will either remove opportunities from one group for the benefit of others, or increase overall production and thus result in greater environmental degradation. Likewise, any strategy to support the private sector may remove opportunities from the poor or vice versa.

In understanding conflicts it is essential to keep this interdependence in mind. It is also important to bear in mind the close and interwoven relationship between the poor and the private sector. Often they are the same people, or people may move from one group to another depending on their circumstances.

The opportunity for conflict between the various strategies is great but how this conflict manifests itself will depend on the local circumstances. Discussing all such conflicts is neither desirable nor possible at this stage. It is possible, however, to draw together some broad areas of possible conflict which can provide a better understanding of the interaction of strategies. This is done below for each of the three problem areas.

In addition to conflicts between strategies there are also many occasions where strategies complement each other. This complementarity can be built upon to resolve conflicts and result in harmonisation of strategies.

### **Conflicts between private sector strategies and those concerned with poverty alleviation**

Wealth, power and skills are not evenly distributed through the community and strategies targeting the small-scale fisheries private sector, without specifically targeting the poor, can lead to the wealthier, more powerful or more skilful members of the community capturing all the opportunities and related benefits. As women are often the poorest and least able to take up opportunities (especially when such opportunities are designed and implemented by men for use by men) their position may be undermined and gender imbalances increased. In some situations business activities controlled by women may be taken over by men, with the women being displaced from the sector as a consequence. For example, efforts to develop the post-harvest sub-sector may attract more men into

that sub-sector and thus remove opportunities from women. An increased post-harvest focus may also reduce the abundance of domestic fuelwood resources and thus increase the workload of women responsible for the collection of fuel for domestic use.

Improved government support to the private sector may, given the government's declining resources under macro-economic austerity programmes, tend to target the most visible and dynamic private sector operators, and those most able to demonstrate rapid returns to the investment of public servants' time and development funds. This will tend to increase wealth stratification in the communities.

Measures to introduce long-term management of the resource and allocate property rights to the private sector may remove short-term opportunities for the poor. Likewise overcoming some micro-economic constraints to the development of the private sector may remove traditional social safety nets which allow the poor to continue in the face of considerable adversity.

New technologies which may be appropriate to the private sector may be less appropriate for the poor with the consequence that they are further marginalised within the sector.

- How will strategies aimed at the development of the private sector conflict with those aimed at poverty alleviation?*
  - *Will support from the private sector remove opportunities for the poor? How will specific groups be affected? How will women be specifically affected?*
  - *Are the private sector specifically targeted to the exclusion of the poor? Why does this occur?*
- How have resource management strategies favoured the private sector?*
  - *Have property rights been established to the exclusion of the poor?*
  - *Have technology changes been introduced which are inaccessible to the poor?*
- How have micro-economic changes to support the private sector affected the poor?*
  - *Have social safety nets been removed or changed?*
  - *How have employment conditions changed?*

### **Harmonising private sector strategies and those concerned with poverty alleviation**

Although conflicts between strategies exist, it is possible to reduce these by adjusting the strategies so that they complement each other.

Adopting private sector support measures tailored to the needs and the capacities of the poor especially women, can assist in encouraging greater participation of the poor in private sector development. Ensuring the participation of the poor in planning private sector development may also assist in selecting more equitable strategies.

Adopting labour, rather than capital, intense private sector strategies will increase employment opportunities for the poor. Encouraging the growth of community-level private sector organisations especially micro-enterprises and supporting positive co-operation between different wealth strata of the private sector will also provide opportunities for the poor to become involved in private sector growth.

Promoting alternative income earning opportunities outside of fisheries will also provide opportunities for the private sector and the poor where resources are in short supply.

If the private sector is developed in ways which ensure that social safety net systems are retained and enhanced, this will also support the poor.

□ *How can private sector and poverty alleviation strategies be harmonised?*

- *How can private sector strategies focus on the micro-enterprise end of the sub-sector?*
- *How can the poor be encouraged and supported to become involved in the development of private sector development strategies?*
- *How can labour, rather than capital, intensive technologies be supported?*
- *How can co-operation between wealth strata be promoted?*
- *What alternative income earning opportunities can be created or enhanced to relieve pressure from the resources?*
- *How can social safety nets be supported in association with private sector development?*

### **Conflicts between private sector strategies and those concerned with the environment**

Where resources are already over-exploited there is clearly limited scope for expanding growth of the private sector without further threatening the resource. Redirecting specific economic measures in the direction of the private sector and increasing support for private sector growth can increase pressure on the environment.

Likewise support for the private sector involved in post-harvest activities may result in further fuelwood depletion. Increased incomes from improved activities may also be channelled back into productive capacity in harvesting. This is particularly so where women processors fund the fishing operations of their husbands.

Where support is provided to overcome micro-economic constraints this may reduce the effectiveness of community resource management systems and further deplete resources. Increasing access to markets and infrastructure may encourage greater involvement in harvesting unless adequate controls are in place thus further increasing environmental degradation.

New technologies developed for the private sector may stimulate economic growth but may also be environmentally degrading.

- To what extent will increased support for the private sector further deplete resources?*
- *Will specific economic measures aimed at the private sector also encourage further resource depletion?*
  - *How will overcoming micro-economic constraints affect community management measures?*
  - *How will improved access to markets and infrastructure affect resource use?*
  - *How will changes in technology affect the environment?*
  - *How will an increased post-harvest focus affect fuelwood resources, salt production, and ice production? What are the environmental implications?*
  - *How will an increased post-harvest focus affect investment in harvesting capacity? What will be the resource implications?*

### **Harmonising private sector strategies and those concerned with the environment.**

Again it is possible to reduce the level of conflict between these groups of strategies.

Encouraging private sector use-rights over resource capital (fishing grounds, fish and fuelwood), promoting community-level institutional strengthening in resource management within the small-scale private sector, and informing and educating on conservation issues can all assist the sub-sector private sector to develop in sustainable ways. Also involving the private sector much more in the decision-making processes at policy and planning levels will assist in arriving at the most acceptable strategies which are most likely to be supported by the private sector.

Adopting private sector harvesting strategies aimed at sustainable resource-use (appropriate technology, sustainable effort levels etc.) and directing private sector growth towards expanded areas of the resource base (new species, new stocks, new grounds, under-utilised resources) can assist. In addition creating improved post-harvest opportunities of the private sector associated with species which are abundant can shift the pressure away from threatened species. This should be done, however, by giving due regard for the sustainability of fuelwood supplies and habitats and avoiding subsequent increased promotion of the fish production sub-sector. Encouraging sustainable fuelwood supplies through property rights over fuelwood resources and through community or state-run forestry projects can help to conserve fuelwood resources whilst generating employment and business opportunities.

Promoting markets for environmentally sustainable products can also assist in finding growth opportunities which support the environment. In the longer term encouraging the

growth of non-sectoral employment in resource-linked communities will increase the mobility of labour and capital out of the sector and thus reduce resource pressure.

Where commercial growth opportunities exist, ensuring that private sector developments (especially infrastructural) within, and environmentally linked to, the sector undergo environmental impact assessments will assist in avoiding environmental degradation. Ensuring that environmentally friendly technologies, such as selective fishing gear, more static fishing methods, lower fuel consumption engines and sail, and fuel efficient processing techniques will also allow private sector development which is more sustainable.

□ *How can private sector and environmental strategies be harmonised?*

- *Can private sector resource rights over fisheries and fuelwood resources be enhanced?*
- *How can the private sector be encouraged and supported to increase their involvement in resource management, policy formulation and planning?*
- *How can the private sector be more informed about conservation issues?*
- *How can more sustainable harvesting techniques be introduced?*
- *Can a greater post-harvest emphasis be supported? How can this be done so as not to lead re-investment into productive capacity in fisheries and fuelwood harvesting? How can post-harvest opportunities in under-exploited resources be increased?*
- *How can the resource base be expanded (resource stocking, finding new species, fuelwood planting, introducing technology to harvest under-exploited fish)?*
- *Can new markets be found for environmentally sustainable products? How can the market be adjusted to more accurately reflect the environmental cost of fisheries products?*
- *How can alternative income generating opportunities be created which will attract labour and capital out of the fishery?*

### **Conflicts between poverty alleviation strategies and those concerned with the development of the private sector**

Again the conflicts which are likely to arise between the strategies to alleviate poverty and those aimed at the development of the private sector are likely to be concerned with transferring options from one group to another. Increased access to natural resources for the poor, for instance, may remove opportunities from the private sector. This will be particularly so where the poor are encouraged and supported to play an active part in co-management systems.

In addition welfare transfers to assist the poor may conflict with market development and increase the opportunity cost of labour. This may in turn weaken debt and other linkages between the poor and the private sector.

- *How will strategies to alleviate poverty conflict with those to promote private sector development?*
  - *How will access to resources be split between different wealth strata?*
  - *How will involvement of the poor in the management of the resources affect the private sector?*
  - *How will welfare transfers affect the market for fish products?*
  - *How will welfare transfers affect wage rates?*
  - *How will welfare transfers affect debt linkages between the poor and the private sector?*

### **Harmonising poverty alleviation strategies and those concerned with the development of the private sector**

These conflicts can be reduced by a range of measures. Moving the focus away from welfare transfers and initiating strategies which encourage and allow the poor to participate in the private sector can complement both private sector and poverty aims.

Training and educating the poor so that they can enter the labour market in fisheries and employment opportunities outside the sector can assist where alternative income earning possibilities have been created.

The poor can also be supported and their institutions strengthened to enable them to access, and participate in the planning of, private sector development. This will be particularly effective if positive linkages between the poor and the private sector are stimulated.

Linkages can also be established between tourism and recreational fishing in protected aquatic areas, controlled and managed by the local community, to allow the poor to benefit from conservation measures and provide private sector growth opportunities.

- *How can poverty alleviation and private sector strategies be harmonised?*
  - *How can the poor be encouraged and supported to play a more active role in private sector development?*
  - *How can alternative income earning opportunities outside of the sector be developed?*
  - *How can the education and skill opportunities of the poor be increased to allow more of them to enter the labour market and achieve higher incomes in more productive work?*
  - *How can community-level institutions which address the needs of the poor be strengthened to allow them better access to the labour market and increase their involvement in sector planning?*
  - *Can tourism and recreational fishing activities be expanded in ways which both support private sector growth and allow the greater involvement of the poor?*

### **Conflicts between poverty alleviation strategies and those concerned with the environment**

Stimulating the poor to become more active in development will often result in further degradation of the environment. Stimulating the growth of micro-enterprise development for the poor, increasing their markets and increasing their access to resources may lead to increased environmental degradation.

Where support for the poor increases their ability to affect policy, their political influence may encourage development policies away from sustainable use of resources. This may be particularly apparent when the short-term needs of the poor are extreme.

Again increased access to credit, technologies, infrastructure and markets for the poor may lead to increased environmental degradation. Removing social and cultural constraints to the development of the poor may adversely affect traditional resource management systems.

□ *How will strategies to alleviate poverty conflict with those aimed at conserving the environment?*

- *Will encouraging the poor to develop businesses encourage unsustainable use of the fish and fuelwood resources?*
- *How will the empowerment of the poor affect environmental policies?*
- *How will improved access to credit, technologies, markets, and infrastructure affect the environment?*
- *Will support for the development of the poor affect the effectiveness of traditional resource management systems?*

### **Harmonising poverty alleviation strategies and those concerned with the environment.**

Whilst poverty and environmental degradation are closely linked there are ways of designing strategies which complement each other. Encouraging poorer groups to use more environmentally friendly technologies in both harvesting and processing can support this. Also assisting the poor to gain and enforce property rights over fish, fishing grounds and fuelwood, educating and enabling the poor to conserve their resources, and supporting their greater involvement in environmental policy and planning can make resource use more sustainable. Where expanded resource base opportunities exist, transferring these to the poor can reduce the impact of fishing on susceptible resources. All expanded opportunities for the poor should also be properly assessed for their environmental impact.

Encouraging employment opportunities in post-harvest sub-sector (where appropriate and in line with available resources) and outside the sector, and enabling the poor to take up these opportunities will also reduce harvesting pressure.

Where environmental conservation and rehabilitation measures are required, encouraging labour intensive measures can generate employment opportunities for the poor whilst supporting sustainable resource use.

The market for the products from the poor can also be adjusted to more accurately reflect the environmental cost of production.

□ *How can poverty alleviation and environmental strategies be harmonised?*

- *What more environmentally friendly harvesting and processing practices can be introduced?*
- *Can property rights over fish and tree resources be encouraged for the poor?*
- *How can the poor be encouraged and supported to play a more active role in conservation and environmental policy and planning?*
- *Where expansion of the resource base is possible, how can the poor be encouraged and supported to access this preferentially?*
- *How can impact assessments of projects to support the poor be improved?*
- *How can sustainable post-harvest opportunities for the poor, and opportunities outside of the sector, be encouraged?*
- *Can conservation strategies be adjusted to become more labour intensive so as to encourage the involvement of the poor?*
- *How can the market be adjusted to more accurately reflect environmental costs?*

#### **Conflicts between environmental strategies and those aimed at support for the private sector**

Environmental regulation, resource management and habitat rehabilitation may reduce growth opportunities and increase operating costs for the private sector in the short-term. This will be particularly difficult for the private sector if regulation, management and the allocation of property rights favour the large-scale private sector. Likewise specific economic measures may increase the operating costs of the private sector or favour the development of the large-scale private sector.

Controlled urban and tourism planning aimed at better environmental management may also reduce market expansion for the private sector.

- *How will strategies to conserve the environment conflict with those aimed at stimulating the private sector?*
  - *How will environmental conservation strategies remove growth opportunities for the private sector?*
  - *How will the management of the resource affect the small-scale fisheries? Will greater opportunities be provided for the large-scale private sector?*
  - *How will specific economic measures designed to reduce environment degradation affect the small-scale private sector?*
  - *How will controls on urban expansion affect markets for fish?*
  - *How will controls on the expansion of tourism affect markets for fish?*

### **Harmonising environmental strategies and those concerned with the development of the private sector**

Environmental strategies can be modified to complement, rather than conflict with, private sector strategies. Regulating and managing the environment in ways which support the development of the small-scale private sector, encouraging private sector participation in policy, planning and implementation of conservation strategies, and carrying out effective impact assessments of private sector support initiatives, are examples.

Again encouraging property rights over resource capital for the small-scale fisheries sector and identifying new opportunities for sustainable expansion of the resource base in favour of the small-scale fisheries private sector can promote environmentally sustainable private sector development. This is greatly enhanced where non-sectoral growth and investment opportunities within resource-linked communities is encouraged.

Market opportunities for the small-scale sector can also be expanded and product ranges diversified so as to lessen dependence on depleted resources.

Specific economic measures targeting the environment (such as taxes, measures to reduce transaction costs, credit and interest) can be designed in ways which also support the small-scale private sector.

Access to, and availability of, environmentally sustainable technologies appropriate to the needs of the private sector can also be encouraged.

- *How can environmental and private sector strategies be harmonised?*
  - *How can the environment be managed to support the greater development of small-scale private sector?*
  - *How can the private sector be supported in becoming more involved in the policy-making, planning and implementation of environmental strategies?*
  - *How can impact assessments of private sector developments be improved?*
  - *How can the resource base be sustainably expanded for the use of the private sector?*
  - *How can the private sector gain property rights over the resources?*
  - *How can the opportunity cost of labour and capital be increased to support movement out of the fishery?*
  - *How can markets be expanded for under-exploited resources?*
  - *What specific economic measures can be developed to promote more sustainable use of resources by the private sector?*
  - *How can harvesting and processing practices be made more sustainable?*

### **Conflicts between environmental strategies and those aimed at poverty alleviation**

Environmental regulation, resource management and habitat rehabilitation may reduce growth opportunities for the poor in the short-term. This will likewise be particularly difficult for the poor if regulation, management and the allocation of property rights favour the wealthier private sector. Likewise specific economic measures may prohibit the poor from participating in the fishery.

Controlled urban and tourism planning aimed at better environmental management may also reduce small-scale trading opportunities for the poor.

- *How will strategies to conserve the environment conflict with those aimed at poverty alleviation?*
  - *How will environmental conservation strategies remove opportunities from the poor?*
  - *How will the management of the resource affect the poor? Will greater opportunities be provided for the wealthier private sector? How will subsistence operators be affected?*
  - *How will specific economic measures designed to reduce environment degradation affect the poor?*
  - *How will controls on urban expansion affect markets for fish?*
  - *How will controls on the expansion of tourism affect markets for fish?*

### **Harmonising environmental strategies and those concerned with poverty alleviation**

Allowing and supporting the greater involvement of the poor in decision-making processes leading to environment policies and plans can greatly enhance their support for such interventions. Enhancing and managing the resource base to provide long-term sustainable resources for the poor, and educating and enabling the poor to conserve their environment, can allow complementarity of these strategies.

Again encouraging the development of opportunities outside of the sector can help the poor to reduce their dependence on depleted resources. This will be further enhanced if the poor are given resource use-rights and expanded resource base opportunities are preferentially allocated to them.

Where conservation measures are to be adopted, the poor can be encouraged to participate through the use of labour-intensive measures. The poor may also have a valuable role to play in promoting the development of tourism in protected areas.

Encouraging access to, and availability of environmentally sustainable technologies appropriate to the needs of the poor can also support poverty alleviation.

□ *How can environmental and poverty alleviation strategies be harmonised?*

- *How can the poor be more involved in environmental policy-making, planning and resource conservation?*
- *Can resource rights and expanded resource use be preferentially allocated to the poor?*
- *How can opportunities for the poor be encouraged outside the sector?*
- *How can conservation measures be made more labour intensive?*
- *How can the poor be encouraged to participate in sustainable tourism?*
- *How can the greater use of environmentally friendly practices be encouraged?*

## **5.29 Identifying and resolving conflicts between these strategies and those at the inter-sectoral level**

The strategies adopted by other sectors (see section 5.2) such as mining, agriculture, energy and tourism can often conflict with those of the small-scale fisheries sub-sector. In particular, the efforts of other sectors to create economic growth, alleviate poverty or overcome environmental degradation, may undermine the strategies used in small-scale fisheries to achieve the same ends.

Many of these have been considered under section 5.22 above. It is important at this stage to ensure that these conflicts have been reduced to an acceptable level or for them to be harmonised.

### **Conflicts between small-scale fisheries strategies and strategies in other sectors**

The agriculture sector may promote the increased use of pesticides and fertilisers to raise farm productivity. This in turn may lead to pollution in the aquatic environment and to reduced opportunities for both the poor and micro-enterprises in small-scale fisheries. In many cases, where agricultural productivity is falling, farmers may be encouraged to leave agriculture and join an already over-exploited fishery. Forestry activities often increase sediment loads in rivers, change flooding patterns, increase habitat destruction, change coastal erosion patterns, destroy coral reefs and block rivers and estuaries. Dam construction changes water run-off patterns, blocks the migration of certain fish species, reduces the area available to floodplain fisheries, and changes water throughput for fish farming.

The multiple demands on aquatic resources from a wide range of resource users can lead to extremes of conflict. In many cases fisherfolk, who are dependent on the aquatic environment for their survival, are low in status and often marginalised to the point where they cannot easily influence integrated zonal planning processes, especially when competing with the influence of high profile sectors.

Conflict often arises in communities because of the way they are regarded by development agents. Most communities in which fisherfolk live are not solely dedicated to the harvesting, processing and trading of fish. They are engaged in a wide range of economic activities including farming, retailing, transport, forestry, etc. Often fisherfolk themselves will also be engaged in some or all of these activities. They are, thus, not concerned only with one sector. As such, fisherfolk, and the communities they associate with, can be affected by a range of different strategies from different sector development agencies. In many cases these will conflict with each other.

- *How do small-scale fisheries strategies conflict with those in other sectors?*
  - *How do the strategies to stimulate private sector development in other sectors conflict with small-scale fisheries strategies?*
  - *How do the strategies to alleviate poverty in other sectors conflict with small-scale fisheries strategies?*
  - *How do the strategies to reduce environmental degradation in other sectors conflict with small-scale fisheries strategies?*
  - *In which sectors does this arise?*

### **Harmonising small-scale fisheries strategies and strategies in other sectors**

In many cases the wider objectives of different sectors appear to complement each other. It is often the more specific, and/or localised objectives and strategies which generate conflict.

Most fisherfolk are involved in a wide range of activities or have needs which come under numerous sectoral headings. They work gardens, they trade, they cut trees, and they require transport, schools, health services etc. It is thus important to ensure that all of the objectives and strategies in these different areas are harmonised with each other.

This can be achieved by ensuring that the different broad sectoral policies are harmonised through improved policy research, planning, and inter-sectoral communications and co-ordination through both formal and informal mechanisms. This not only requires more effective co-ordination at the ministerial policy level but also at the operational level through a breaking down of the strict sectoral boundaries which exist. The introduction of coastal zone management systems which integrate the needs and aspirations of users in different sectors can reduce adverse consequences. Also taking a precautionary approach to development in coastal, wetland, lakeshore and river basin areas can avoid adverse effects.

At the project-level inter-sectoral co-ordination can be increased through improved environmental impact assessment. It may also require greater co-ordination between sectors at the grassroots levels where a more integrated approach to community development could be adopted but within a planning framework which has evolved with the full participation of the community concerned.

It can also be improved through a more outward looking approach to the sub-sector which acknowledges the benefits of the work in other sectors, and which sees the merit in the alternative research and development tools used in those sectors.

Achieving a greater understanding of the complexities and inter-sectoral nature of the activities of fisherfolk can also improve the way support is provided at the grassroots level.

- *How can strategies across sectors be harmonised?*
  - *How can inter-sectoral policy research at the community level be improved?*
  - *How can inter-sectoral planning be improved?*
  - *How can inter-sectoral communications and co-ordination be improved?*
  - *How can integrated coastal, wetland, river basin and lakeshore management systems be introduced or improved?*
  - *How effective are fisheries issues considered in impact assessment methods? How can this be improved?*
  - *How can a more integrated approach to community development be developed?*
  - *How can a precautionary approach be incorporated more effectively?*
  - *How can the community more actively participate in development planning?*
  - *How can attitudes, skills, knowledge and institutional arrangements within development agencies be improved to facilitate such changes?*

### **5.30 Identifying and resolving conflicts between these strategies and those at the district, regional, national and international levels**

Where policy formulation and planning has been decentralised, small-scale fisheries strategies may also conflict with wider cross-sectoral district or regional-level development strategies. The small-scale fisheries sub-sector can also contribute to the achievement of national development objectives provided that the strategies adopted at the sub-sectoral level are harmonised with those at the national level, often they are not. This is also true of the relationship between sub-sectoral strategies and international agreements and arrangements. All have the potential for conflicts and for wasting resources. They also have the potential to be harmonised so that these conflicts can be reduced.

#### **Conflicts between small-scale fisheries strategies and strategies at district, regional, national and international levels**

Conflicts between sub-sector strategies can arise between different levels in the development process. This is particularly the case when lower level staff in the small-scale fisheries sub-sector do not have the skills or resources to interact with local government administrations or where they receive conflicting sets of advice from the fisheries ministry and from the district/regional authorities. In such cases small-scale fisheries strategies can conflict directly with the strategies adopted by these local administrations resulting in wastage of resources.

Sub-sectoral policies should also relate directly to national policies. In reality, however, the sub-sector often develops without reference to national policies, or sub-sectoral policies remain static when national development policies have moved on and evolved new priorities and directions. As a consequence, strategies designed to promote development in the small-scale fisheries sub-sector may conflict with those established at the national level.

Most countries regulate their international relations through a range of treaties and agreements. Whilst national governments may agree on such harmonisation, it might not actually occur in practice. This may be due to a lack of understanding of these international obligations at the sub-sectoral level.

The United Nations Convention on the Law of the Sea (including the recent agreement relating to the conservation management and of straddling stocks and highly migratory fish stocks), the Code of Conduct for Responsible Fishing and the Biodiversity Convention are key agreements which affect small-scale fisheries but there are many more which affect the sub-sector less directly. The Montreal Protocol affects the use of CFCs used in refrigeration and ice making equipment used in fisheries. International

agreements on the protection of coastal habitats for the breeding of migratory birds may not be fully appreciated at the fisheries sectoral level. In some cases development agents may be aware of the implications, but fisherfolk may have no knowledge of the linkages between their actions and such agreements. *Agenda 21* also has provisions which deal with the sea and inland aquatic environments and with decision-making processes.

In some cases international agreements may support wider development at the national level but conflict directly with policies established in the small-scale fisheries sub-sector. International financial support for sectors outside of fisheries (such as mining) may, for instance, be conditional on nationals of the donor country gaining access to local fisheries resources. These non-local fishing vessels may interact directly with the small-scale local vessels resulting in a loss of fishing opportunities and gear conflicts, or they may lead to resource depletion.

In some situations international trade and labour agreements can affect activities at the micro-level. Controls over the movement of migrant labour between countries may, for instance, affect opportunities for saving money through foreign employment in mining. This may in turn affect the levels of investment made in the small-scale fisheries sub-sector in the home community.

In many cases conflicts arise because resources are shared between countries. Rivers may flow between countries, or countries may be opposite or adjacent to each other across lakes and coastal areas. Where different strategies are adopted in different but adjacent countries, they may conflict with each other. If the means used by adjacent countries to manage shared, cross-boundary resources conflict, this may lead to an escalation of environmental degradation rather than improved overall resource management. The restrictions placed on domestic fleets concerning the exploitation of high seas resources may also differ from country to country. Pollution management strategies for shared aquatic environments can also conflict.

- *How can fisheries strategies conflict with strategies at the local, national and international level?*
- *How do fisheries strategies conflict with those at the district and regional levels? What are the consequences of such conflicts?*
  - *How do fisheries strategies conflict with national development strategies? Why do these conflicts exist and what are the consequences?*
  - *How do fisheries strategies conflict with international agreements, treaties, trade practices?*
  - *Which environments and resources are shared with other countries and how does this generate conflict?*
  - *How do development activities in other countries affect the local environment and how does this affect fisheries?*

**Harmonising small-scale fisheries strategies and strategies at district, regional, national and international levels**

Much decentralisation of policy and planning in small-scale fisheries in the past has been ineffective because it has been little more than the devolving of responsibility for the implementation of centrally defined strategies. By so doing, the local needs, aspirations, capacities and perceptions of problems are excluded from the development process. Conflicts at this level can be avoided if the district-level authorities are allowed and supported in the process of evolving local policies for development which combine those identified at the community level with national priorities. If these are then fed into wider regional level policies, which ultimately contribute to national sub-sectoral policies, much of these conflicts are removed.

Conflicts with national-level strategies can be overcome through a increased emphasis on improved policy research and analysis within the small-scale fisheries sub-sector which links the development of the sub-sector to the wider economy. Effective co-ordination mechanisms, established to allow those responsible for the development of the sub-sector to participate in the formulation of national and international policy frameworks, are also important.

Routine assessment of policies decided outside of the sub-sector, can prevent conflicts arising between international agreements and the sub-sector.

National and international policies and agreements need to be translated into terms which are easily understood at the grassroots level. Improved communications with local communities can also form the basis of discussion on the most appropriate methods of implementing such policies and agreements.

- *How can fisheries strategies be harmonised with those at the local, national and international levels?*
- *To what extent are local level authorities involved in the decision-making processes in the small-scale fisheries sub-sector? How can this be improved? How can district-level strategies for the sub-sector be combined at the regional level and fed into national sub-sectoral strategies?*
  - *How well developed are policy analysis skills in government? How well are national policies monitored and sub-sectoral policies adjusted accordingly?*
  - *What policy co-ordination mechanisms exist? To what extent is the fisheries sector included in this? How prominent are small-scale fisheries issues?*
  - *How effectively are international agreements, treaties and practices monitored for their impact on the sub-sector? How are policies, plans and legislation adjusted to accommodate these impacts?*
  - *How do the development activities in neighbouring states impact upon domestic development strategies? How can co-ordination and communications between development agencies in adjacent countries be improved?*